THE EVOLUTION OF SERPENTINE STONE AS A BUILDING MATERIAL IN SOUTHEASTERN PENNSYLVANIA: 1727-1931

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DEDICATION

In Memoriam: Alice Kent Schooler,
Architectural Historian Extraordinaire,
without whose guidance and example I would not have made it this far. This thesis is dedicated to her ultimate goal of seeking out and understanding the roots of architecture through the diligent search of primary source documentation and the assiduous observation of the evidence of the buildings themselves.

ACKNOWLEDGEMENTS

As with any project of this size, there are so many people to thank. Just in case I leave anyone out: it isn't because I don't appreciate your help, it's that this Acknowledgement was written last, after a very hectic six months of frantic research and brain cudgeling writing - the thesis may be done, but the memory is gone. Thank you, and I apologize if I've forgotten you.

The staff members of the following organizations were most helpful in guiding me through their resources: Bill Whitaker, Dr. Emily Cooperman, and Laura Stroffolino of the Architectural Archives at the University of Pennsylvania; Bruce Laverty of The Athenaeum of Philadelphia; Diane Rofini, Marion Strode, Wesley Sollenberger, and Pam Powell of the Chester County Historical Society Library; Jim Subach of the Nature Conservancy's State Line Serpentine Barrens; Greg Ramsey of the Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission; Robert C. Smith, II, of the Bureau of Topographic and Geologic Survey, Pennsylvania Department of Conservation and Natural Resources; and the staffs of Fisher Fine Arts Library at the University of Pennsylvania, the Hagley Museum Library and Archives; Nottingham [Chester] County Park, and the University of Pennsylvania Archives.

The following professors gave me helpful hints and guidance and allowed me to pick their brains: Dr. David DeLong, Professor of Architecture, University of Pennsylvania; Frank Matero, Professor of Architecture and Graduate Group Chair, Historic Preservation Program, University of Pennsylvania; Dr. Gommah Omar, Professor of Geology, University of Pennsylvania; Dr. George Thomas, Lecturer in Historic Preservation, University of Pennsylvania; Dr. Richard Webster, Professor of History, West Chester University; Dr. Christa Wilmanns-Wells, Lecturer in Historic Preservation, University of Pennsylvania.

The following friends, neighbors, and colleagues gave me valuable assistance and helpful information: Jennifer Bentley, Rebecca Carr, Dave and Margery Hinchberger, Rosemary Philips (Librarian Emeritus, Chester County Historical Society), Paul Rodebaugh, Molly Sheehan, Nathaniel Smith, Mary Sproat, Kathy Wandersee (of the

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Not enough is said in acknowledgements about the value of simple moral support, especially when it is offered at a time of uncertainty, disillusionment, and/or self-doubt. The following friends and relatives came through with the right words or actions (such as giving me dinner - always a morale booster) at the right time: Dr. John E. C. and K. M. Dorchester (my parents), John R. C. Dorchester (my brother), Margaret Epp, Bill and June McLaughlin, and Jim and Linda Saunders.

And finally, but really first, thank you very much to my Advisor John D. Milner for having the great good sense not to apply too much pressure but who was always there when I needed advice and guidance; and to my Reader Dr. Roger W. Moss for having the grace NOT to mention my first, very badly written, draft (and that's the last time I'll ever mention it) and for lending an ear when necessary. Thank you, it has been an honor and a pleasure.

LIST OF ILLUSTRATIONS

Please note: All photographs were taken by the author unless otherwise noted.

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CHAPTER 1: INTRODUCTION

The foundation for this thesis was the final project for John Milner's Building Technology Class which looked at serpentine as a construction material. In the course of researching that project, I became aware of the rise in popularity of serpentine as a building stone in the late 1800s. And I wondered why. Initially, I thought that the right person, Joseph H. Brinton, had come along at the right time, 1869, to promote serpentine as a suitable building material for the times, 1870s through the 1880s (see Photograph #1).

And then, while frantically studying my way through Dr. David DeLong's American Architecture After 1876 Class, it occurred to me that there <u>must</u> be a relationship between the rise of bright yellow-green or blue-green serpentine's popularity in the late 1800s and the rise in popularity of polychromy in the late 1800s. A thesis was born!

So, this thesis started out to answer the question, "Why did serpentine become popular as a building stone?" In the course of the research undertaken to endeavor to answer that question, the thesis's focus shifted to concentrate on

Photograph #1: The East Wing of the University of Pennsylvania's College Hall (1871-1872), designed by T. W. Richards (1836-1911). For more information about the Hall, see pages 39 and 89 to 93.

what kinds of buildings were constructed of serpentine where and when, including when serpentine began to be used as a component in the mid to late Victorian architect's polychromatic palette. Along the way, quite a lot of information was dug up about the serpentine quarrying operations in Southeastern Pennsylvania, including Lancaster County, and Northeastern Maryland. Because of the extent of the serpentine quarrying operations in this region, this thesis has been confined to the quarrying operations in Chester County, Pennsylvania.

There are two astonishing facts that have come out of all this research. The first fact is how far-flung the buildings were that were constructed of serpentine in the late 1800s; remembering that the only forms of transportation opened to shippers of building stone at that time were draft-animal-drawn wagons and trains; canals having past their heyday a good twenty years before. Serpentine stone was being shipped from Chester County to such far-flung locales as Racine, Wisconsin[1] and New Orleans, Louisiana.[2] There may be even more far-flung

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[1]Joseph H. Brinton, "Letter to John M. Roberts" Ms #76588 (West Chester, Pa.: Chester County Historical Society, July 11, 1879[?]), p. 247.

[2]Daily Local News (West Chester, Pa.) June 26, 1885.

serpentine buildings out there, those discussed in this thesis are the ones unearthed by extensive research in the time allotted.

The second fact is that at least two of the architects who used serpentine between 1870 and 1904 were either schooled at or born in West Chester, Pennsylvania. West Chester, the County Seat of Chester County, justifiably can claim to be the capital of serpentine country, being surrounded on three sides by serpentine quarries, including Brinton's to the southwest and Taylor's to the north. The two architects who used serpentine and who were familiar with West Chester were Elijah J. Dallett, Jr., of Baker and Dallett, and T. Roney Williamson. Dallett (1861-1917) lived in West Chester and attended school there.[3] Baker and Dallett designed at least two buildings in serpentine: the Demonstration School and the Old Library Building at West Chester Normal School. Williamson (1852-1896) was born in West Chester, and in 1884 set up his residence there.[4] Williamson designed at least four buildings in serpentine, the choir building of Holy Trinity Episcopal Church in West

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[3]Sandra L. Tatman and Roger W. Moss, "Dallett, Elijah James, Jr." Biographical Dictionary of Philadelphia Architects: 1700-1930 (Boston: G. K. Hall & Co., 1985), p. 185.

[4]Ibid., "Williamson, Thomas Roney," p. 856.

Chester, and the Old Gymnasium, "Green Gables", and Recitation Hall at West Chester Normal School.[5]

A related tidbit of information dug up in the course of this research is that, according to Joseph H. Brinton's Obituary, he was a Shakespearian scholar who "knew the elder Furness well, a great Shakespearian scholar".[6] The Furness referred to being architect Frank Furness's brother, Horace Howard Furness.[7] This tidbit provides a definite, if tenuous, connection between Joseph Brinton, serpentine quarryman, and an architect, Furness, with decided polychromatic tastes AND at least one serpentine building (Nineteenth Street Baptist Church, see page 108) to the credit of his firm, Furness and Hewitt (firm dates, 1871-1875).

It would be interesting to conduct more research to see if one reason why serpentine became popular in the late 1800s was because at least two if not three architects, who designed with polychromatic palettes, had prior knowledge

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[5]See Chapter 6 for a further discussion of Baker and Dallett's, and Williamson's contributions to serpentine architecture.

[6]Daily Local News, April 17, 1931.

[7]George E. Thomas and David B. Brownlee, Building America's First University: An Historical and Architectural Guide to the University of Pennsylvania (Philadelphia: University of Pennsylvania Press, 2000), p. 66.

of serpentine's vivid color and used it to come up with a serpentine based polychromy.

All of the information that has been turned up about buildings constructed of serpentine, including from which Chester County quarries the serpentine came, and the architects, stone contractors, and stone brokers or agents who designed for, worked with, and ordered, the serpentine, has been put into a spreadsheet labelled "Buildings Constructed of Serpentine Stone" that is located in Appendix A of this thesis. This was the only way I could get a handle on all the information I had dug up from all the diverse sources I ended up having to consult (backed by a list of sources not consulted due to time constraints). The spreadsheet forms the basis from which most of the information and conclusions in this thesis spring.

There are a few pieces of information that the reader should know going into this thesis. First, all the buildings and quarries mentioned in this thesis are located in Chester County, Pennsylvania, unless otherwise noted.

Second, when first quarried, serpentine is a very vivid color, whether it be the yellowy-green variety or the blue-green variety (see Photograph #2). There is a certain amount of evidence that these colorings proved to be ideal for catering to the polychromatic tastes of the late Nineteenth Century.

Third, to a geologist, serpentine is a rock. Only when serpentine rock is quarried is it referred to as stone, and only then by architects, quarrymen, stone agents, and stone contractors (and lay people like you and I) - geologists ALWAYS refer to stone as rock.

And fourth, as far as I can tell, there were up to five levels of people involved in the designing and construction of a stone building. There was (1) the owner who hired (2) an architect to design a building. The architect, after consulting with the owner, quite often (but not always) consulted (3) a stone broker or agent to ascertain what stones for construction were available, where they could be acquired, and for what price. The stone agent would then consult either his (4) clients, the quarrymen, or would look around for unrepresented quarries (who would become

Photograph #2: Serpentine rock in and on the ground at Brinton's Quarry, showing its vivid green color.

[4]) to make inquiries of. After much negotiating back and forth among owner, architect, agent, and quarryman, a deal would be struck, the stone would be shipped, and (5) the stone mason or contractor, having been hired by the architect, would start the business of laying up the walls of the building. Many times, the stone contractor also acted as the stone agent, and once the stone agent had contacted the quarryman and a deal had been struck, the quarryman dealt directly either with the stone mason or the architect. Occasionally, the owner communicated directly with the quarryman. The reason why everyone seemed to want to communicate with the quarryman was because the entire building schedule hinged on the quarryman getting the stone shipped in a timely manner. One day's delay could throw the whole building schedule off. And nobody likes the prospect of not being able to move into their new building as planned.

I hope that this thesis is informative and will prove helpful in understanding why serpentine was used as a construction material when it was used as such. At the very least, I hope it makes it clear that far more information needs to be gathered to understand the

relationship between serpentine and late Victorian polychromy so that when conservators attempt to restore a crumpling serpentine building (see Photograph #3), they will research and appreciate the building's polychromatic palette, of which the serpentine was a part.

There are two reasons why this relationship has not been clearly delineated. First, for all of the local interest in serpentine, NO ONE has compiled even a preliminary list of serpentine buildings constructed in this area, let alone outside the Southeastern Pennsylvania region. This situation calls for an extensive amount of travel and research to ascertain which of those buildings constructed of serpentine still exist, which of them have been refaced, who designed the buildings, for whom they were built, and exactly when they were built.

And second, over the years, many of the serpentine buildings either have been demolished or have been refaced, making it difficult to ascertain their existence. This situation also has made it difficult to ascertain the relationship between polychromy and serpentine because many of the buildings erected between 1870 and 1890 which

Photograph #3: Philadelphia's Nineteenth Street Baptist Church (1874), designed by the architectural firm of Furness and Hewitt (firm dates, 1871-1875). For more information about this Church, see pages 107 to 108.

presumably, based on the architectural fashion of that time, were polychromatic, no longer exhibit their polychromy. Their polychromy has been lost, or at least obscured, because it was based on a painted polychromatic palette that has been covered up by subsequent paint layers (see Photographs #4 and #5) or some other material (aluminum cladding, for one). This situation suggests that paint analysis is needed in order to establish what the polychromatic palettes were on these buildings.

I also hope that this thesis lays the groundwork for future research both of the geology of serpentine and the quarrying of it. There needs to be far more research done on the differences between Serpentinite, serpentine, and greenstone, if any. There are differences of definition between geological sources, mineralogical sources, and architectural sources. Some of these differences may have to do with the age of the source; geology really has come into its own only in the mid to late Twentieth Century with the advances in technology that now allow geologists to literally look inside a rock to see its mineral and chemical make-up. But even taking that into account, there appear to be differences of opinion. The reason it is

Photograph #4: One of four serpentine houses erected next door to each other in the Borough of West Chester in circa 1870 and possibly designed by well-known Philadelphia architect Addison Hutton (1834-1916). They are commonly referred to as "The Four Sisters". This Photograph, and Photograph #5 that follows, are of the western-most two houses (see Photographs #13 and #14 for the eastern-most two houses).

Photograph #5: One of four serpentine houses erected next door to each other in the Borough of West Chester in circa 1870 and possibly designed by well-known Philadelphia architect Addison Hutton (1834-1916). They are commonly referred to as "The Four Sisters". Photograph #4 (previous page) and this Photograph are of the western-most two houses (see Photographs #13 and #14 for the eastern-most two houses).

important to establish these differences, if any, is that different rock types will call for different restoration solutions. And in the same vein, it needs to be ascertained, once and for all, which of these rocks were used as building stone and which were not.

Having made that assertion, the history of all the serpentine quarries in Southeastern Pennsylvania, including Lancaster County, needs to be researched from the building stone stand-point, not solely the geological. The reason this research needs to be done is because there is a certain amount of conflicting information from secondary sources on whose quarry supplied which buildings with serpentine. There is also conflicting information from secondary sources on how many quarries were out there supplying serpentine for buildings. This situation is due to the fact that the only research into these quarries has been geologically based. No one, to my knowledge, has ever done any serious research into the basic social, commercial, and architectural history of these quarries. So the primary sources of information about these quarries are obscured, causing a lack of secondary source information about them, or, causing later secondary sources

to do nothing but reinterpret the few morsels of information found in earlier secondary sources. And it is important to find out from whence the serpentine came because the serpentine from different quarries appears to be of differing quality, that is, of differing weather-resistance.

Finally, this thesis has been organized in such a way as to make the research done so far on this subject as easily digestible as possible. The thesis starts with some background information on the geology of serpentine so that the reader can understand the rarity and nature of the commodity. It then addresses three aspects of the subject: the serpentine quarrying operations, the types of buildings constructed of serpentine, and the evolution of the use of serpentine as a building material. And it concludes, of course, with a conclusion.

In organizing my thesis in this way, I hope to achieve two things. First, I hope to instill in the reader an appreciation of the enormous potential for more fruitful research into serpentine's geology, quarrying, and use. And second, I hope to open a window, however small, onto

the history of the quarrying operations in Chester County, Pennsylvania and the role that Joseph H. Brinton played in bringing serpentine to the forefront of the heyday of polychromatic architecture in the late 1800s.

CHAPTER 2: A BRIEF EXPLANATION OF THE GEOLOGY OF SERPENTINE ROCK

Serpentine rock in Chester County, Pennsylvania was laid down as igneous rock over 600 million years ago; approximately 575 million years ago, the Iapetus or Theic Ocean covered the area of the Earth's mantle which would eventually support Chester County, and 450 million years ago, this Ocean closed up again.[8] By then, the Ocean's waters had started the metamorphosis of the igneous rock based on magnesium silicates into the metamorphic rock we now call serpentine. Serpentine rock is based on three hydrous magnesium silicate minerals, Antigorite, Lizardite, and Chrysotile, that form the serpentine mineral group. Lizardite went through an additional stage in which it was exposed to warm atmospherically derived water that interacted with its magnesium silicates.[9] Antigorite and Lizardite are fine-grained and commonly massive, while Chrysotile is fibrous - it produces a type of asbestos.[10]

There are two types of rock which are based on the serpentine group of minerals. The first is Serpentinite

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[8]Robert C. Smith, II, and John H. Barnes, Geology of Nottingham Park (Harrisburg, Pa.: Pennsylvania Geological Survey, 1998), p. 1.

[9]Ibid., p. 2.

[10]Cornelis Klein and Cornelius Hurlburt, Jr., Manuel of Mineralogy (New York: John Wiley & Sons, Inc., 1993), ps. 506-507.

which is a rock composed almost entirely of minerals from the serpentine group and with little or no iron present.[11] The second is the rock that is commonly known in Southeastern Pennsylvania as serpentine, whose basis are minerals from the serpentine group, but which has had other minerals added to the mix, giving it a distinct appearance and composition. These other minerals include iron, talc, chromite, magnetite (magnetic iron oxide), and chlorite.[12] Also, serpentine rock is almost always found in association with rocks which contain one or more of the following: mica, feldspar, tourmaline, and quartz.[13]

In color, Serpentinite is a dark green,[14] while serpentine rock varies from pale yellow to very dark green and includes blue-green.[15] The color of serpentine rock depends on what minerals are included in the make-up of the rock. For instance, high levels of olivine, which is a magnesium silicate high in magnesium, will cause the serpentine rock

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[11]Harvey Blott and Robert J. Tracy, Petrology (New York: W. H. Freeman & Co., 1996), p. 75; and Nottingham, p. 2.

[12]Mineralogy, ps. 506 & 510; and Dr. Gommah Omar, Geology Professor, University of Pennsylvania, interview by Jane E. Dorchester, December 1, 1999; and Petrology, p. 367.

[13]J. Smith Futhey and Gilbert Cope, A History of Chester County, Pennsylvania (Philadelphia: Louis H. Everts, 1881), reprint West Chester, Pa.: Chester County Historical Society, 1986), p. 438.

[14]Petrology, p. 367; and Omar, 12/1/1999.

[15]Roger A. Dorsey, "The Goat Hill Serpentine Barrens" (Harrisburg, Pa.: Bureau of Forestry, [no date]), p. 1; and Omar, 12/1/1999.

to be yellowy-green (see Photograph #6), and high levels of pyroxene, a magnesium silicate high in silicates, will cause the rock to be bluish in color.[16]

While the minerals in the serpentine group of minerals are fairly common and found throughout the world,[17] serpentine rock, and its associated Serpentine Barrens, is not common.[18] Serpentine rock can be found in only a few countries in the world; three of them are England, Canada, and the United States.[19] Within the United States, serpentine rock can be found in only four states: Pennsylvania, Maryland, Oregon, and California.[20] In Southeastern Pennsylvania, serpentine rock is found in Delaware, Chester, Lancaster, Montgomery, and Philadelphia Counties.[21] There appear to be two arcs of serpentine in Southeastern Pennsylvania. The southernmost starts in Chestnut Hill, Philadelphia County, runs southwest through

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[16]Dr. Gommah Omar, Geology Professor, University of Pennsylvania, interview by Jane E. Dorchester, December 6, 1999.

[17]Mineralogy, p. 510.

[18]"Serpentine Barrens in Pennsylvania" (Philadelphia: The Nature Conservancy, [no date]), [p. 1].

[19]Ibid.; and Nottingham, p. 2.

[20]"Serpentine Barrens", [p. 1]. Nancy C. Pearre and Allen V. Heyl, Jr., Chromite and Other Mineral Deposits in Serpentine Rocks of the Piedmont Upland Maryland, Pennsylvania and Delaware (Washington, D. C.: United States Government Printing Office, 1960), ps. 712-713, insists Serpentine can also be found in the State of Delaware. It is the only geologic source I've found making that claim, though.

[21]Chromite & Other Minerals, ps. 718-720.

Photograph #6: Serpentine rock in and on the ground at Brinton's Quarry, showing its vivid green color, evidence of a high concentration of Olivine.

Lower Merion Township, Montgomery County, and then arcs from the southwest corner of Radnor Township, Delaware County to the southern sector of Aston Township, Delaware County.[22] The northernmost arc starts in northeast Radnor Township, Delaware County and arcs through to West Nottingham Township, Chester County before continuing into Lancaster County and finally ending in central Maryland above Washington, D. C.[23] Outcrops can be found in the following Chester County municipalities (from east to west): Easttown, Willistown, East Goshen, West Goshen, Westtown, Thornbury, Birmingham, East Bradford, West Bradford, Pocopson, Newlin, East Nottingham, Elk, and West Nottingham Townships.[24] There is an isolated discontinuous outcrop located in Edgemont Township, Delaware County, and Willistown and Westtown Townships in Chester County more or less where the three Townships meet (see Illustration #1).[25]

The largest contiguous outcrop of serpentine rock in the eastern United States is found in southwestern Chester

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[22]"Mineral Deposits in the Central Serpentine Districts of the Maryland-Pennsylvania Piedmont Upland" and "Mineral Deposits in the Northern Serpentine Districts of the Pennsylvania-Delaware Piedmont Upland", Chromite & Other Minerals, Plates [maps] 41 and 42.

[23]Chromite & Other Minerals, maps.

[24]Chromite and Other Minerals, maps; and "Geology Chester County Pennsylvania", Chester County Geology (West Chester, Pa.: Chester County Planning Commission, 1994), map following p. 65.

[25]"Geology Chester County Pennsylvania"; and "Mineral Deposits in the Northern Serpentine Districts", Plate 42.

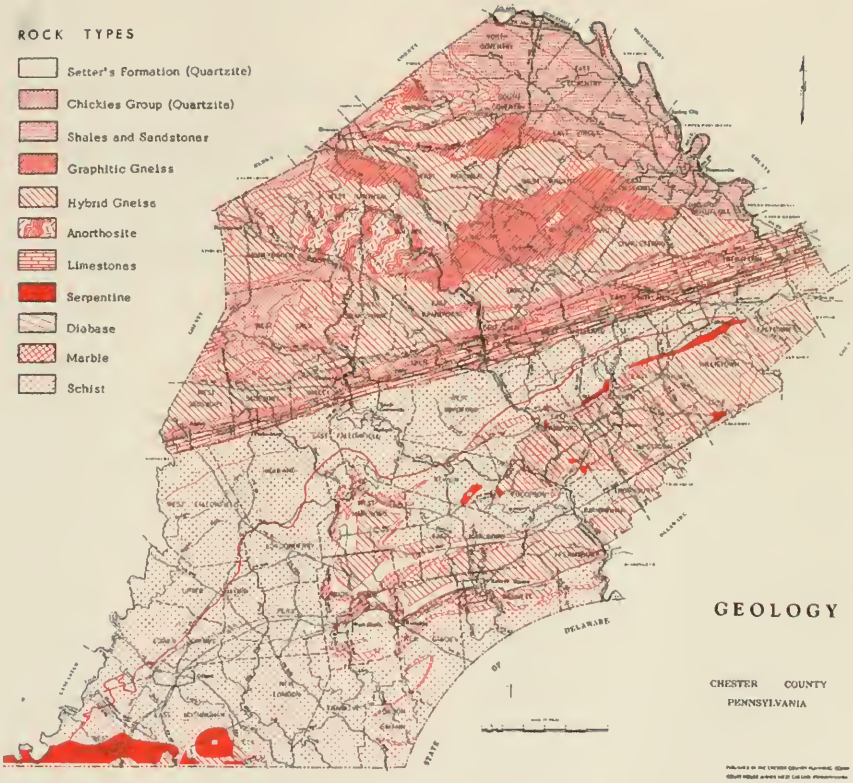

Illustration #1: "Geology Chester County Pennsylvania", Chester County Geology (West Chester, Pa.: Chester County Planning Commission, 1994), following p. 65. Serpentine outcrops are shown as solid red.

County (see Illustration #1).[26] This outcrop is now protected in two areas located on its eastern and western ends. These areas are known as the Nottingham Serpentine Barrens and the Goat Hill Serpentine Barrens.[27]

Ironically, for all the serpentine rock found in Southeastern Pennsylvania, it was quarried for building stone at only a handful of locations. Some of these locations will be discussed in the next Chapter.

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[26]"Geology Chester County Pennsylvania".
[27]"Serpentine Barrens", [p. 1].

CHAPTER 3: A HISTORY OF SERPENTINE STONE QUARRYING OPERATIONS IN CHESTER COUNTY, PENNSYLVANIA, 1727 TO 1931

Serpentine rock was quarried in Chester County for use as a building material from at least the mid-1720s to the late 1920s. From the mid-1720s until about 1868, serpentine was quarried privately at outcroppings located near the sites of the buildings for which the rock was being quarried.

A handful of these private quarries were mere farm quarries whose stone was used exclusively for the construction of the buildings located on the farm. These unnamed farm quarries were located in Willistown (as many as three) and East Goshen (at least one) Townships. Most of these quarries were used just once when the first stone house and barn were constructed; consequently, these quarries had all been shut down by about the 1820s.

The rest of these private quarries were well-known enough to have names; these named quarries included the Devon Quarry, Easttown Township,[28] the Serpentine Ridge Quarry, Westtown Township,[29] and Marshall's Quarry, McCall's Quarry,

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[28] Chromite & Other Minerals, p. 725.

[29] D. J. Lake and S. N. Beers, Map of the Vicinity of Philadelphia, (Philadelphia: Lake & Beers, 1860), Westtown Township Plate.

and Taylor's Quarry,[30] all located in West Goshen Township just north of West Chester (see Illustration #1).

For only two of these quarries has any definite information been obtained. The first is the Serpentine Ridge Quarry that will be discussed later in this Chapter. And the second is Taylor's Quarry. This Quarry produced an unusual serpentine known locally as "blue" serpentine. Taylor's Quarry appears to be the only serpentine quarry to have produced blue serpentine for building stone and its serpentine appears only to have been used in the vicinity of the Quarry, most notably in the Borough of West Chester. As far as can be told, Taylor's Quarry was opened in the 1730s,[31] and only operated, sporadically, until the 1850s.[32] The other private quarries had ceased operations by 1883.[33]

From about 1868 to 1895, serpentine was quarried for building stone on a far more commercial scale than it had ever been before or has since. Four serpentine building

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[30] Chromite & Other Minerals, p. 725.

[31] Site Analysis Course, "Taylor-Whitcraft House Documentation" (Philadelphia: Historic Preservation Program, University of Pennsylvania, Spring, 2001).

[32] Chromite & Other Minerals, p. 725.

[33] Breou's Original Series of Farm Maps, Chester County, Pennsylvania (Philadelphia: W. H. Kirk & Co., 1883), appropriate townships.

stone quarries sprang up in Chester County during this period. Dunlap and Martin's Quarry, located in West Nottingham Township, operated in the 1870s and then again in the 1920s.[34] It probably had started as a chrome extraction operation and then began quarrying serpentine for building purposes as a side line. All that is known about this Quarry is that it was considered a dimension stone quarry and in 1878 it provided the serpentine for the Nottingham Presbyterian Church (see Photograph #7). The last time serpentine was quarried there was in 1927 when it was extracted for use in the William Galbrath House in New Oxford.[35] No evidence has been found to date to indicate that serpentine dimension stone was being quarried there between 1878 and 1927.[36]

McClure's Serpentine Quarry was located in Westtown Township on the northwest slope of the serpentine ridge where the Serpentine Ridge Quarry was located. It operated on and off from circa 1873 to circa 1900. The only building documented to have been constructed from serpentine extracted at this Quarry is the Pleasant Grove

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[34]Chromite & Other Minerals, p. 725.
[35]Nottingham, ps. 3-4.
[36]Chromite & Other Minerals, p. 725.

Photograph #7: Nottingham Presbyterian Church (circa 1878), constructed of serpentine from Dunlap and Martin's Quarry, West Nottingham Township.

Schoolhouse (1882) on the Wilmington Pike in Westtown Township (see Photograph #8).[37] And the Carter and Reynold's Serpentine Quarry was located in West Nottingham Township, Pennsylvania along the Pennsylvania-Maryland border north of Rising Sun, Maryland. It was opened in 1875 and operated for an undetermined amount of time. Supposedly, it supplied stone for buildings in Philadelphia and Baltimore, including the Laboratory Building at an unspecified University, possibly the University of Pennsylvania.[38]

The most commercially successful quarry not only in Chester County but in all of Southeastern Pennsylvania was the Serpentine Ridge Quarry[39] located in the southwestern corner of Westtown Township on the southern and eastern slopes of the same ridge upon which McClure's Quarry was located. By 1873, the Serpentine Ridge Quarry was known as "Brinton's Quarry" (see Photograph #9).[40] According to several secondary sources, Brinton's Quarry was quarried for

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[37]Arthur James, From Farmland to Suburbia: Westtown Township, Chester County, Pennsylvania (West Chester, Pa.: Chester County Historical Society, 1973), p. 45.

[38]J. P. Lesley, ed., The Geology of Chester County, After the Surveys of Henry D. Rogers, Persifor Frazer, and Charles E. Hall, (Harrisburg: Second Geological Survey of Pennsylvania, 1883), ps. 64-65.

[39]Lake and Beers, "Westtown".

[40]Breou's Map, "Westtown".

Photograph #8: Pleasant Grove Schoolhouse (circa 1882) in Westtown Township, constructed of serpentine from McClure's Quarry, Westtown Township.

Photograph #9: The west and north walls of the Lower Quarry Hole at Brinton's Quarry, Westtown Township.

serpentine as early as 1730.[41] It definitely was being quarried by the early 1800s, as is evidenced by three houses that stand or stood (one has been recently demolished along with its accompanying barn) along New Street and Street Road across from the Quarry and that were constructed of the stone between 1800 and 1805 (see Photograph #10).

On September 17, 1867, John C. Savery leased for a term of five years from William Jones, Jr. the serpentine quarry that was located on Jones's farm in the southwest corner of Westtown Township. On January 28, 1869, Joseph H. Brinton leased the quarry from Jones for a term of twenty-five years. Whether Savery and Brinton were leasing the same quarry, or two different quarry holes on the same serpentine ridge has not been ascertained. Regardless, on March 1, 1869, John C. Savery signed an Article of Agreement with Joseph H. Brinton and Dr. Daniel G. Brinton to operate the Serpentine Ridge Quarry on William Jones's farm as the firm of Brinton, Savery, and Brinton.[42] By September of 1869, Joseph Brinton had bought out his two

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[41]James, Westtown, p. 9; and Chester County Day Paper, (West Chester, Pa.) October 7, 1972.

[42]Village Record (West Chester, Pa.), March 9, 1969.

Photograph #10: The Spackman Corner Chimney House (circa 1800) in Thornbury Township. This house is located across the street from the quarry which eventually became known as Brinton's Quarry, and from whence its stone came.

co-partners[43] and sometime thereafter bought the quarry and the land whereon it was situated from William Jones.[44] He continued his ownership until his death in 1931.[45]

Joseph H. Brinton was born on August 5, 1834 at Homestead Farm, Thornbury Township, Chester County.[46] Except for a brief stint at Yale, he would spend all of his life on this farm, located just southeast of the Quarry that eventually bore his name. In 1856, he graduated from the Sheffield School of Arts at Yale University with a Ph.B. in chemistry and geology.[47] He was a well-known agriculturalist, scientist, and inventor, especially of stone-cutting equipment. This equipment was tested at his quarries.[48]

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[43]Joseph H. Brinton, John C. Savery, and Dr. Daniel G. Brinton, "Articles of Agreement," Ms #33130a-e (West Chester, Pa.: Chester County Historical Society, March 1, 1869).

[44]Scrapbook of Joseph Hill Brinton, Daniel Garrison Brinton, and Christian Brinton, Christian Brinton Collection (West Chester, Pa.: Chester County Historical Society, [c. 1870-1931]), p. 49.

[45]Robert W. Fowler, [Untitled Article], Sunday Inquirer (Philadelphia), July 4, 1971.

[46]Gilbert Cope, The Brinton Genealogy: A History of William Brinton Who Came from England to Chester County, Pennsylvania in 1684 and His Descendents with Some Records of the English Brintons, compiled & edited by Janetta Wright Schoonover (Trenton, NJ: Press of MacCrellish & Quigley Co., [1924?]), p. 351.

[47]"Joseph Hill Brinton, Ph.B. 1856." Bulletin of Yale University Obituary Record of Graduates Deceased During the Year Ending July 1, 1931, Including the Record of a Few Who Died Previously, Hitherto Unreported, Number 90, 28th Series, No. 6 (1 December 1931): [no page]; from Brinton Family Scrapbook, p. 72.

[48]American Republican (Chester County, Pa.), March 24, 1874; and Jane E. Dorchester, "Darlington's Corners", Sunday Local News (West Chester, Pa.), December 6, 1987.

Besides leasing and then owning the Serpentine Ridge Quarry[49], Brinton also was involved with the operation of at least two if not three other quarries. From no later than the early 1880s until about 1892, Brinton was part owner of a granite quarry named "Fox Hill" that was located in Warwick Township.[50]

During approximately the same time period, he was involved with Leiper's Quarry that possibly was located in Delaware County.[51] It is not known for sure what kind of stone was quarried here, but Brinton advertised that he could supply "Pennsylvania Green Stone, Grey Stone, and Brown Stone" to his customers (see Illustration #2).[52] The "green stone" is serpentine, and presumably the "grey stone" is the granite from the Fox Hill Quarry, so that just leaves from whence the "brown stone" came. At this point, the only other quarry that Brinton is known to have had an association with and that is unaccounted for is Leiper's Quarry. He

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[49]Brinton advertised and operated his Serpentine Quarry under various names, but the name which it quickly became known as popularly was Brinton's Quarry. See Appendix B for a list of the other names under which the Quarry was operated.

[50]Daily Local News (West Chester, Pa.), September 8, 1885, and April 22, 1892.

[51]Joseph H. Brinton, "Letter to 'Grandpa'" Brinton Family Scrapbook, (February 12, 1887), p. 38.

[52]Joseph H. Brinton, "Pennsylvania Green Stone, Grey Stone, and Brown Stone [shipping label]" Westtown Township Ephemera Files - Business Houses, "A to Co" (West Chester, Pa.: Chester County Historical Society Library, [no date]).

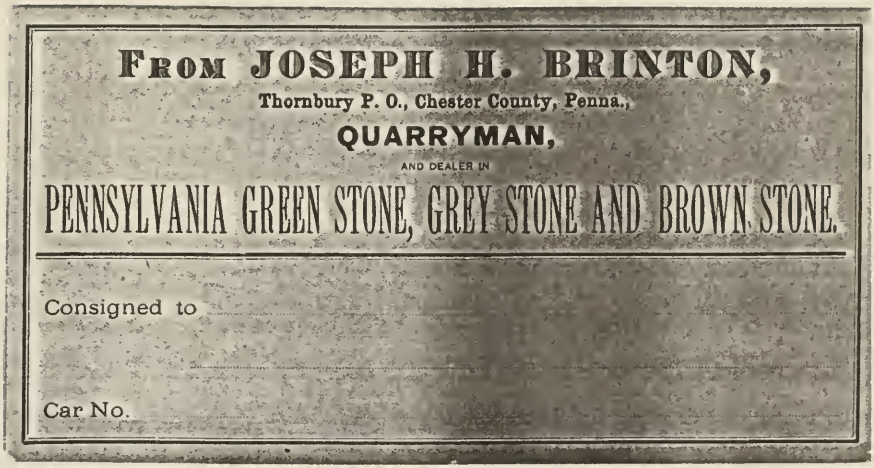

Illustration #2: Joseph H. Brinton's shipping label listing the different stones with which he could provide his customers.

also spent a considerable amount of time in the early 1890s promoting a building stone he dubbed "Conestoga Pink Sandstone" (see Illustration #3).[53] Where this stone was quarried has not been ascertained; it may have been quarried at an as-yet-unknown quarry with which Brinton was involved.

Brinton was a resourceful businessman. He offered three types of quarried serpentine to his customers: dimension stone, Ashlar stone, and rough stone. Normally, stone was cut out of a quarry and shipped in the rough (and thus called rough stone) to the building site where it was further cut and dressed according to the directions of the architect or mason. In order to encourage architects and contractors to use his stone, Brinton devised a way for the stone not only to be quarried, but also to be further cut into either dimension stone, broken range, or Ashlar and to be dressed as either rough (rock) faced or smooth-faced, at the Quarry so that it was shipped ready to be installed in

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[53]Joseph H. Brinton, "Advertising Cards," Westtown Township Ephemera Files - Business Houses, "A to Co"; and Letters to Joseph H. Brinton, Township Collections Boxes, Westtown Township Business Houses - Brinton's Green Serpentine Quarry, Correspondence (West Chester, Pa.: Chester County Historical Society Library, January 2, 10, 17, & 30, 1893). The letters are from, respectively, Garrett & Dix, Stone Merchants; William C. Lewis, Stone Broker (two); and The Martens-Turner Company, Real Estate, Loans and Insurance.

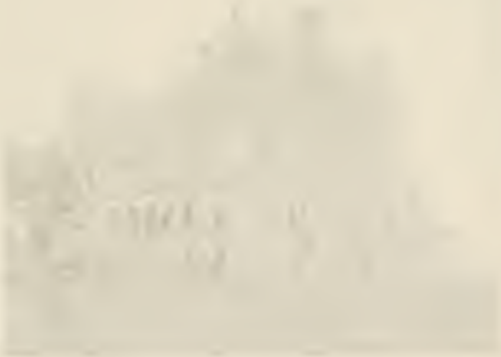
THE POTTS MANSION, CHESTER CO., PA.

Built of Conestoga Pink Sand Stone, from the Quarries of Joseph H. Brinton, Thornbury, Chester County, Penna.

THE STERNBERG MANSION, BERKS CO., PA.

Built of Conestoga Pink Sand Stone, from the Quarries of Joseph H. Brinton, Thornbury, Chester County, Penna.

Illustration #3: Two of Joseph H. Brinton's advertisement cards displaying pictures of two mansions constructed of Conestoga Pink Sandstone.



its appropriate place.[54] He accomplished this feat by having architects send him their plans of their new buildings. He then would use these plans to cut each stone according to its place on the plans.[55] He also invented or co-invented (with Henry Disston) several stone dressing machines to enable the work to be done at the Quarry.[56]

This system of quarrying lessened the transportation costs of shipping the stone to the construction sites as well as lessening the amount of stone wasted at the site.[57] According to a March 24, 1874 article in the American Republican, the process of dressing the stone at the Quarry took advantage of the stone's supposed propensity to be "soft" when first quarried but to "harden" within a year of its exposure to the air.

Brinton was also a great salesman. At the Centennial Exhibition in Philadelphia in 1876, he won an award for a block of serpentine as well as carved vases made out of

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[54]Joseph H. Brinton, "Birmingham Serpentine Stone Quarries, and Steam-Power Stone Works [price list]", Westtown Township Ephemera Files - Business Houses, "A to Co".

[55]Daily Local News, August 20, 1878; and Joseph H. Brinton, "Letter to P. G. Oberdorf" and "Letter to G. R. [Flevidge]" Account Book, Ms #76588 (West Chester, Pa.: Chester County Historical Society Library, April 5, [1878?]), ps. 237 & 250.

[56]American Republican, March 24, 1874; and James, Westtown, p. 9.

[57]Daily Local News, August 20, 1878; and Joseph H. Brinton, "Letter to Charles Early" Ms #76588 (April 5, [1878?]), p. 113.

serpentine from his quarry. He then proceeded to advertise that his serpentine had been thus exhibitted and awarded.[58] He also listed or pictured in his advertisements for the Quarry the bigger and better known buildings which were constructed from his serpentine. Buildings thus advertised included: the Academy of Natural Sciences Building in Philadelphia, the University of Pennsylvania's College Hall (see Illustration #4);[59] and the campus of West Chester Normal School.[60]

And he was quick to seize an opportunity to sell stone from more than one of his quarries. For instance, he not only supplied the serpentine Ashlar for a building in South Bend, Illinois, but he also supplied the Conestoga Pink Sandstone for its steps.[61] He also made it a habit to send samples of his stones, gratis, to prospective customers, be they architects, agents, contractors, or owners. Thus, stone samples were sent to as far away as Buffalo, New

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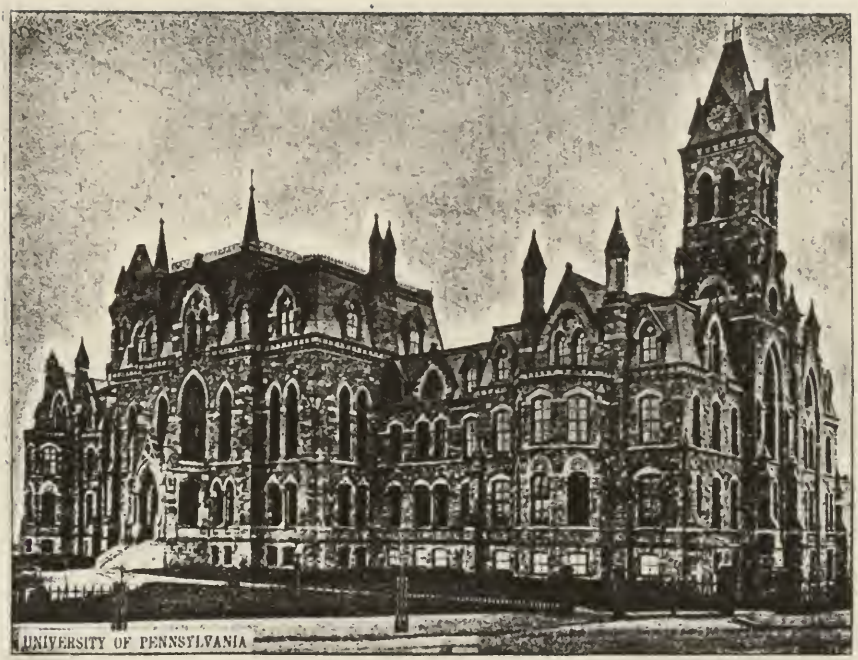
[58]Dorchester, "Darlington's Corners".

[59]Harold W. Arndt, [Untitled Article], Chester County Day Paper (West Chester, Pa.), October 1, 1960; Joseph H. Brinton, "Pennsylvania Green Stone or Serpentine" Brinton Family Scrapbook, p. 40; and Joseph H. Brinton, "Business Envelopes" Westtown Township Ephemera File - Business Houses "A to Co".

[60]Joseph H. Brinton, "Building Stone" Brinton Family Scrapbook, p. 49.

[61]Joseph H. Brinton, "Letter to S. H. Durham, Architect" Account Book "Letters", Ms #76815 (West Chester, Pa.: Chester County Historical Society Library, July 20, 1893), p. 8.



Built of Pennsylvania Green Stone, from the Quarries of Joseph H. Brinton, Thornbury, Chester County, Penna.

Illustration #4: Joseph H. Brinton's business envelope displaying a picture of College Hall (1871-1872), University of Pennsylvania, Philadelphia. For more information about the Hall, see pages 89 to 93.

York, Danbury, Connecticut, and Peoria, Illinois (among other places).[62]

The heyday for Brinton's Quarries appears to have lasted from 1870 to about 1895. Starting in the 1880s, the Quarry began experiencing serious problems, including cave-ins which damaged equipment, especially the water pumps;[63] labor troubles tied to national events;[64] and at least one fire which occurred in 1887 and which destroyed the quarry mill, water pumps, stone-cutting saws, and other equipment.[65] By 1888, the old quarries (now known as the upper and lower quarries) had been abandoned and had filled with water, and the new quarry (now known as the dry quarry) was being worked instead.[66] In 1889, Joseph Brinton was sued over a contract dispute involving several other parties besides himself. This dispute took over a year to settle.[67]

In spite of these set-backs, Brinton continued to quarry serpentine at a fairly brisk rate until about 1895. But a

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[62]Cyrus K. Porter, "Letter to Joseph H. Brinton, Esq." and William R. Miles, "Letter to Mr. Joseph Brinton" Township Collections Boxes, Westtown Township Business Houses - Brinton's Green Serpentine Quarry, Correspondence (February 28, 1893 and January 19, 1893, respectively); and Joseph H. Brinton, "Letter" Ms #76588 (June 30, 1879[?]), p. 214.

[63]Daily Local News, January 28, 1882.

[64]Ibid., April [?], 1882.

[65]Ibid., April 6, 1887.

[66]Ibid., [????] 2, 1888.

[67]Ibid., July 19, 1889.

telling sign was the notice in West Chester's Daily Local News, dated August 1, 1893, that stated that Brinton had had to lay off several hands. Quarrying was a seasonal business very much tied to fair weather - as long as the weather was warm, quarrying operations continued. Laying-off hands in August was not a good sign. In June of 1895, the Daily Local lamented that Brinton's Quarries "are working in a listless sort of way" because "other varieties of stone have been placed on the market at such a low rate that the serpentine quarries cannot compete." This article goes on to report that transportation is a problem too because "[t]here is no railroad or place for shipping stone within a reasonable distance of the quarries."[68] By 1895, interest in serpentine had begun to decrease. By 1900, serpentine's popularity had waned to such an extent that Joseph Brinton had ceased fulltime operations at the Quarry. Instead, the old quarries were being used as popular swimming holes, complete with bath houses and diving boards.[69]

In 1902, Patrick J. McCormick and Son, stone contractors from West Chester, leased the Quarry and attempted to

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[68]Ibid., June 1, 1895.
[69]Ibid., August 13, 1908.

revive the serpentine stone quarrying business.[70] Between 1902 and 1914, serpentine was shipped to as far away as Lynchburg, Virginia, and Cleveland and Liverpool, Ohio and as close to home as West Chester.[71] But, the business was never as brisk as it had been in its heyday under Joseph Brinton. By 1923, the serpentine was being used only as crushed stone for concrete or gravel.[72]

On April 6, 1929, an advertisement appeared in the Daily Local News that stated that Brinton's Quarries could supply serpentine for Facing Stone, Rubble Stone, Racking and Cellar Stone, and Road Stone; nevertheless, after approximately 200 years of being worked for building stone, Brinton's Serpentine Quarries closed down for good in 1931.[73]

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[70]Ibid., January 17, 1906.

[71]See Appendix A for the spreadsheet showing where serpentine was sent and when.

[72]Daily Local News, June 26, 1923.

[73]Fowler, July 4, 1971.

CHAPTER 4: A DEFINITION OF WHAT CONSTITUTES "VERNACULAR" ARCHITECTURE

In order for the evolution of the use of serpentine stone as a building material to be more easily discerned, it is important to understand what constitutes "vernacular" architecture. Therefore, this Chapter will explore the definitions of "vernacular" architecture in order to come to an understanding of what kinds of buildings were constructed of serpentine over the years.

There are many definitions of what vernacular architecture is or is not. According to Merriam Webster's Collegiate Dictionary, the word *Vernacular* means: of, relating to, or characteristic of a period, place, or group, especially: of, relating to, or being the common building style of a period or place. And according to the Concise Oxford Dictionary, the term *Vernacular architecture* means: concerned with ordinary buildings, not cathedrals, etc. Architectural historians and cultural geographers have more technical definitions than these two, many of which stress the temporary nature of vernacular architecture.

According to these definitions, in theory, there are two kinds of architecture: monumental or landmark and vernacular. Monumental architecture is the architecture of those buildings or structures that symbolize values which are considered to be permanent. The term "vernacular" is applied to the architecture of structures and buildings that have no permanent symbolism, so therefore, are considered to be temporary. For instance, a religious building is considered to be permanent because it represents the religion in which its congregation practices its beliefs and so therefore is expected to exist ad infinitum. But, a railroad way station building is considered temporary because it does not symbolize the railroad itself (its main terminal fulfills that function) and it is assumed that as the needs of the railroad change over time, the way station building will be changed or replaced, regardless of its architectural design mode. Therefore, the terms "monumental" and "vernacular" apply more to the symbolism of the building and the longevity of its use, and less to its architectural design aesthete. So in theory, an early religious meeting house of no discernible architectural design should be considered monumental (see Photograph #11); whereas, a way station

Photograph #11: Goshen Orthodox Friends Meeting House (circa 1827) in Goshenville, East Goshen Township. This Meeting House was remodelled for the Goshen Grange and is now a part of the Goshen Friends School.

building designed in a Gothic Revival mode should be considered vernacular, not because it has no discernible architectural aesthete, but because it is a building which in theory does not symbolize the railroad and will be changed or replaced to accommodate the changing needs of the railroad (see Photograph #12).

On the other hand, in practice the term "vernacular" is applied to any building or structure which has no discernible architectural merit, regardless of its symbolism or its function. For instance, the above mentioned meeting house, in practice, is considered "vernacular" or exhibiting a vernacular "style", meaning not in a recognized architectural mode. In fact, "vernacular" could be defined in practice as applying to buildings or structures whose plan or design is based solely on the efficient use of space, not on the aesthetics of the time. Therefore, such "monumental" buildings or structures as churches, market houses, and prisons are labelled "vernacular"; not because of their lack of symbolism or the longevity of their function, but because of their lack of a discernible aesthetic statement.

Photograph #12: The Clifton-Alden Railroad Station on the Southeast Pennsylvania Transportation Authority (SEPTA) R3 line. This is a good example of a Gothic Revival train station.

The best of the technical definitions of vernacular is that which is found in the Introduction to Common Places: Readings in American Vernacular Architecture edited by Dell Upton and John Michael Vlach: "Vernacular architecture is *non*-high style building; it is those structures *not* designed by professionals; it is *not* monumental; it is *un*-sophisticated; it is *mere* building; it is, according to the distinguished architectural historian Nicholas Pevsner, *not* architecture."[74] However, the problem with even the best definition is that it attempts to place architecture in a black and white world: either a building is monumental or it's not, in which case it's vernacular. This kind of definition may work well for theoretical discussions, but it tends to be difficult to apply on a practical basis because the reality is that there are in fact at least *three* kinds of architecture: monumental, vernacular, and a mix of both.

Before a definition of vernacular can be created, a definition of the kinds of architecture has to be ascertained. Certainly, monumental architecture is

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[74]Dell Upton and John Michael Vlach, ed. Common Places: Readings in American Vernacular Architecture (Athens, Ga.: The University of Georgia Press, 1986), p. xv.

composed of those buildings designed by architects with a specific design theory in mind. And if vernacular architecture are all those buildings of a temporary nature and/or no discernible architectural design theory; what are all those buildings that fall somewhere in between? According to William Pierson, they are examples of "low style" which "was conservative and almost totally devoid of that vitality and inventiveness which characterized the work of the great architects, but the level of craftsmanship was frequently high . . ."[75] Pierson also goes on to define folk architecture as architecture built in emulation of the higher styles but by "farmers, artisans, and yeomen, who were removed from the sophistications and pretensions of the urban areas . . ."[76]

In the end, the conundrum is: how to reconcile the theoretical definition of "vernacular" with the practical one? The best way may be to define architecture as consisting of four categories of buildings: monumental, conservative, folk, and vernacular. Monumental architecture consists of all those buildings erected

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[75]William H. Pierson, Jr., American Buildings and Their Architects: the Colonial and Neoclassical Styles (Garden City, NY: Doubleday & Company, Inc., 1970), p. 15.

[76]Ibid.

according to a specific design theory as propounded by an architect (see Photographs #13 and #14). Conservative architecture consists of all those buildings which outwardly emulate the sophistication of the monumental buildings but were not designed by professionals (see Photograph #15). Folk architecture consists of all those buildings which have discernable characteristics which allow them to be identified as from a particular region or era but do not evince the level either of design sophistication or skilled construction techniques of monumental or conservative architecture (see Photograph #16). And vernacular architecture consists of all those buildings that can not be identified as being from a specific region or era nor exhibit any design sophistication or skilled construction techniques and in many cases were obviously meant to be temporary (see Photograph #17).

This discussion may not seem to be pertinent to an understanding of the evolution of serpentine as a building material. But, in order to understand its evolution, one must first have a clear understanding of what kinds of architecture exist, or existed, that *could have been*

Photographs #13 and #14: Two of the four serpentine houses erected next door to each other in the Borough of West Chester in circa 1870 and possibly designed by well-known Philadelphia architect Addison Hutton (1834-1916). They are commonly referred to as "The Four Sisters". Photographs #13 and #14 are of the eastern-most two houses (see Photographs #4 and #5 for the western-most two houses).

Photograph #15: The Sybilla Brinton House (circa 1873-1874) in West Chester, designed by an unknown architect. The serpentine for the house came from the quarry belonging to Miss Brinton's brother, Joseph H. Brinton.

Photograph #16: The Joshua and Lydia Hunt Farmhouse (1805) constructed of serpentine from the Serpentine Ridge Quarry (later Brinton's Quarry). An early 1800s tenant farmhouse was located directly behind this one and a few hundred yards up the road. It and its serpentine barn unfortunately were demolished a few years ago, but the serpentine barnyard wall still survives in tact.

Photograph #17: A portable backyard shed in West Goshen Township. This type of backyard shed tends to be disposed of as the owner's needs outgrow it.

constructed of serpentine at any given time. For instance, serpentine buildings, by the very nature of the permanency of their construction material (stone), can not be considered vernacular. Vernacular buildings, as has been discussed, tend to be impermanent. At the very least, serpentine is used in folk architecture. So, this thesis is concerned with the rise of serpentine stone from its use in folk architecture to its use in monumental architecture.

CHAPTER 5: AN OVERVIEW OF CERTAIN TRENDS IN MID TO LATE NINETEENTH CENTURY ARCHITECTURE IN THE UNITED STATES

Two trends in mid to late Nineteenth Century monumental architecture are important to understanding the evolution of serpentine as a building material. The first trend is that of the use of polychromatic palettes by mid to late Victorian architects. And the second is the reaction against the romantic architectural aesthete which encouraged the use of polychromy. Out of this reaction grew (among other things) the White City Movement.

The fashionable architecture in the United States in the Nineteenth Century from about 1830 through to about 1895 tended to look to English precedents and fashionable architecture. So this discussion of the use of polychromy will look only and briefly at the English trends in polychromy in the Nineteenth Century in its discussion of American polychromatic architecture of the same century.

Before we move on with our discussion, a definition of what polychromy is should be noted here. Architecturally, polychromy is the elaborate use of a variety of colors in decoration. Generally, polychromy simply means multi-

colored, that is, using more than two colors with which to decorate. In practice, the term "polychromy" is applied to architectural palettes if the intend of the palette is to contrast color values. For example, a Victorian house painted in two contrasting shades of green with a red accent is considered polychromatic. But, a Neo-Classical building built of white and whitish-gray limestone whose window trim is painted very light gray is considered monochromatic because the colors were not intended to contrast with each other. Also, not all polychromatic palettes were wildly elaborate or ostentatiously colored. There was a taste, especially in the United States, for subdued, if not downright subtle, polychromatic palettes.

Polychromy began to creep into Romantic Classical architectural design in England in the 1840s.[77] But polychromatic architecture really came into its own in England with the introduction of "Victorian Gothic" architecture. In 1850, William Butterfield (1814-1900)[78] introduced permanent polychromatic architecture and the High Victorian Gothic with his All Saint's Church, Margaret

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[77]Henry-Russell Hitchcock, Architecture: Nineteenth and Twentieth Centuries, The Pelican History of Art, ed. Nicholas Pevsner, (Baltimore, Md.: Penguin Books, 1971), ps. 118 & 154.

[78]Paul Thompson, William Butterfield (London: Routledge & Kegan Paul, 1971), ps. 10-11.

Street, London. It was constructed of red brick with black brick bands and patterns - a palette to be followed, almost assiduously, by various English, and some American, architects ever after. In fact, polychromy became one of the principle hallmarks of the High Victorian Gothic in England.[79]

There were two types of polychromy characteristic of Victorian Gothic architecture: structural or permanent, and painted or applied (see Illustrations #5 and #6). Structural polychromy is achieved through the use of different colored building materials; whereas, painted polychromy is achieved through the use of contrasting colored paints. In 1856, Butterfield introduced a third type of polychromy which Henry-Russell Hitchcock labels "polytexture".[80] That is, rather than relying on contrasting colors only, Butterfield deliberately played with the textures of the different building materials, especially the texture of brick against stone as he did in his Aldbourne School of 1857-1858.[81]

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[79]Hitchcock, ps. 147-148, and 250.
[80]Ibid., ps. 252-253.
[81]Thompson, p. 230.

Illustration #5: An example of structural polychromy. Notice the contrast of the orange brick against the grey stone accented by the red roof shingles. ["A Suburban Residence", American Victorian 1988 Calendar (Berkeley, Calif.: Zephyr Press, 1988), June.]

Illustration #6: An example of painted polychromy. Notice the buff yellow and light green accents to the contrasting dark green weatherboarding and rust red woodwork. [Ibid., "A Cottage at Block Island, R. I. Chas. E. Miller, Architect, New York, N. Y.", July.]

From 1856 until about 1871, English architects played with the different kinds of polychromy and felt free to experiment with different kinds and colors of brick and stone, sometimes using them together, sometimes not, and sometimes supplementing them with paint to achieve polychromatic palettes. Because of the search for ever more distinctive polychromatic patterns and "looks", the use of local building stones became popular. Many of these local stones had never been used for more than folk architecture and in some cases, could not be used far outside their localities because of the small quantities that were available.

In the early 1860s, all painted polychromy was re-introduced as well as a more subtle polychromatic palette.[82] By the late 1860s, polychromatic architecture was becoming less popular in England. By 1870, the polychromy was much more subdued; white trim being used to contrast against one colorful material such as an unusually colored brick.[83] By the late 1870s, High Victorian Gothic was passé in England, and with it went polychromatic design.

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[82]Hitchcock, p. 256-257.
[83]Ibid., p. 269.

In the United States, the High Victorian Gothic as known in England never really became popular. An easy answer to this situation is, because of the religious diversity of this country, no one religion could pressure the architects and churches throughout the country to follow one kind of architectural theory. Instead, Gothic-based architecture, what Hitchcock terms "Neo-Gothic", took a different route and was applied in different ways than it was in England. The early Gothic Revival in this country was encouraged by the likes of Andrew Jackson Downing and Alexander Jackson Davis, both of whom advocated painted polychromy (see Illustration #7).

By the 1850s, the architectural aesthete in the United States called for a certain amount of toned-down color - in opposition to the strict monochromy of the Classical school of architecture. Generally, a pale color for the walls was contrasted with a darker color for the trim. In masonry construction, the wood trim was sometimes bi-colored. This encouragement of the use of color lead to the polychromy of the mid to late 1800s.

Illustration #7: An example of Alexander J. Davis inspired painted polychromy. [Peg Sinclair and Taylor B. Lewis, Victorious Victorians: A Guide to the Major Architectural Styles (New York: Henry Holt and Company, 1985), p. 13.]

While the High Victorian Gothic was being introduced and practiced in England, Gothic Revival was holding firm in the United States in all its (painted) polychromatic glory. In fact, in this country, polychromy was applied to other than strictly Neo-Gothic designs: sometimes, it was applied to Italianate forms and the Second Empire mode, too (see Illustration #8).

The High Victorian Gothic didn't make it to American shores until 1863, a full 12 years after it was introduced in England.[84] The first High Victorian Gothic building constructed in this country was the Nott Memorial Library at Union College in Schenectady, New York, designed by Edward T. Potter (1831-1904) in 1856.[85] But it wasn't until Peter B. Wight's National Academy in New York was constructed between 1863 and 1865 that the High Victorian Gothic really took off. Wight (1838-1925) utilized "boldly banded pointed arches and walls diapered in colored stones" in his Academy.[86] In fact, the only difference between Gothic Revival and High Victorian Gothic in this country was the introduction of structural polychromy and

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[84]Ibid., p. 271.

[85]Marcus Whiffen, American Architecture Since 1780: A Guide to the Styles (Cambridge, Mass.: M. I. T. Press, 1981), ps.90-91 and 309.

[86]Hitchcock, p. 271.

Illustration #8: An example of an early Second Empire house displaying a subdued polychromatic palette. [Sinclair and Lewis, p. 35.]

polytexture in conjunction with or instead of painted polychromy (see Photograph #18). In this, the American architects may have had an advantage over their English compatriots: there was a wider variety of stones available to them than to their English counterparts. And these stones could be produced in relatively large quantities. So, American High Victorian Gothic, also known as Victorian Gothic,[87] tends to use different colored stones as widely as the English used different colored bricks. Hitchcock contends that "such American materials as the popular brownstone of Portland, Conn., and the light-colored Berea sandstone from Ohio, enliven by accents of livid green serpentine from Pennsylvania, could produce a polychromy richer and more enduring than the endemic Butterfieldian or Teulonian red brick, with banding of bricks dipped in black tar, that had been in general use for a decade."[88]

A subset of High Victorian Gothic was the Collegiate Gothic mode (see Photograph #19) which could be designed in a highly polychromatic manner or not, according to the tastes of the trustees of the institution for whom the building

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[87]John J.-G. Blumenson, Identifying American Architecture: A Pictorial Guide to Styles and Terms 1600-1945, 2nd. ed., revised & enlarged (Nashville, Tenn.: American Association for State and Local History, 1981), p.33.

[88]Hitchcock, p. 275.

Photograph #18: Fisher Fine Arts Library (1888-1891) at the University of Pennsylvania, Philadelphia. This is a good example of polytexture at its best: designed by Frank Furness (1839-1912).

Photograph #19: The Dormitory Quadrangle (1894-1912) at the University of Pennsylvania, Philadelphia. An example of the Collegiate Gothic by Cope and Stewardson (firm dates, 1885-1902).

was being contemplated. Collegiate Gothic lasted in popularity long after the Gothic Revival had fallen from favor (according to Marcus Whiffen, until circa 1925).[89]

Interest in Neo-Gothic architecture finally began diminishing in the late 1870s and early 1880s. But polychromatic architecture was not dead yet in the United States. It was picked up by the Queen Anne Revival (really more appropriately Elizabethan Revival or Shavian Manorial) that was introduced to this country in 1874, and continued in popularity until about 1910. Originally, the Queen Anne Revival emphasized painted polychromy and polytexture with some structural polychromy (see Photograph #20). At its peak in popularity, from about 1880 to 1895, painted polychromy and polytexture became more favored than structural polychromy.

In 1893, the City of Chicago hosted the fifteenth World's Fair. But this World's Fair, named "the World's Columbian Exposition", was like no other that had come before. It trumpetted a new architectural aesthete that came to be

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[89]Whiffen, p. 177.

Photograph #20: A mid to late Nineteenth Century rowhouse in Philadelphia showing painted polychromy and polytexture with some structural polychromy.

known as "The White City Movement" (see Illustration #9).[90] The White City Movement was a reaction against the Romantic Movement that had produced first "Neo-Gothic" architecture and then later the "Queen Anne Revival". It was anti-polychromy, anti-picturesqueness, and anti-English, French, and rural American architectural precedents. It promoted a new classicism that emphasized classical precedents for both architecture as well as city planning. Its palette was monochromic; light neutral colors, particularly white, were the only suitable colors for true architecture, anything more was considered gauche.

The White City Movement took the country by storm, and polychromatic architecture was dead, except in the more conservative pockets and echelons of society. It changed architectural design theories; and those changes began to occur relatively quickly after the end of the Fair. One of the changes that occurred was that in the late Nineteenth and early Twentieth Centuries, in response to the new White City aesthete, the Queen Anne Revival became less

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[90]I would like to thank Dr. David DeLong for teaching two excellent Architectural History courses from which notes I have taken the information on the White City Movement. The courses are "American Architecture After 1876" and "The Evolution of Architecture". If there are any mistakes in this section, they are solely my fault, not Dr. DeLong's.

Illustration #9: The Court of Honor, World's Columbian Exposition, Chicago, 1893. [David Watkin, A History of Western Architecture, 2nd ed. (London: Laurence King, 1996), p. 458.]

ostentatiously polychromatic, relying, if anything, on polytexture for its design interest.

By around 1910, the White City Movement had educated the public to view the clean, white, monumental architecture of the new Classicism (see Photograph #21) as the epitome of architecture and to eschew anything not classically based as ugly, heavy-handed, and amateurish. Ultimately, the Queen Anne Revival passed out of favor as old-fashioned, fussy, and ostentatious and with it went the use of polychromy.

Photograph #21: The First National Bank of West Chester (now Chester County). A good example of the Neo-Classical architectural mode designed by Louis Carter Baker, Jr. (1859-1915), of Baker and Dallet (firm dates, 1888-1912), in 1913.

CHAPTER 6: THE EVOLUTION OF SERPENTINE'S USE AS A BUILDING STONE, 1727 TO 1931

Having looked at the types of buildings that were constructed of serpentine and at the trends in architectural fashion in the late Nineteenth Century, we are now ready to explore the evolution of serpentine as a building material.[91] The use of serpentine as a building material can be divided into roughly four periods: the Folk Building Period (1727-1843), the Conservative Building Period (1843-1867), the Monumental Building Period (1867-1895), and the Final Building Period (1895-1931). Most of the folk architecture constructed of serpentine was erected in the Folk Building Period. The Conservative Building Period is when serpentine began being used for more fashionably conscious buildings. Some folk buildings, especially barns, spring houses, and other farm outbuildings, were still being erected during this time. The Monumental Building Period is when most, if not all, of the buildings constructed to architects' designs were built. Conservative buildings were also being erected during this period. And the Final Building Period is when

[91]See Appendix A for a spreadsheet delineating all of the hard evidence relating to when serpentine was used as a material building, by whom, where, and from which quarries.

the use of serpentine as a building material declined and finally ended. A mix of building kinds was being constructed during this time, but fewer buildings were erected in this period than in the first.

The Folk Building Period of serpentine use started around 1727 and lasted until about 1843. During this time, serpentine was quarried in private quarries for use in folk architecture. The types of buildings constructed from serpentine at this time included barns, spring houses (see Photograph #22), carriage or wagon houses (see Photograph #23), and of course, farmhouses. Many of these buildings were located on the same property as the quarry. Farmhouses constructed of serpentine quarried from farm quarries include the Taylor-Whitcraft House (c. 1736) in West Goshen Township (see Photograph #24); and the Thomas Smedley House (c. 1795), the William Cox House (c. 1802), and the Thomas Hutchison House (c. 1805), all in Willistown Township (see Photographs #25 and #26).[92]

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[92]Jane E. Dorchester, "Technical Report William Cox House, c. 1802" (present owners, September, 1998), TMs; "Technical Report Thomas Hutchison House, c. 1805" (Willistown Township Historical Commission, 1997); and "Technical Report Thomas D. Smedley House, c. 1795" (Willistown Township Historical Commission, c. 1996), TMs.

Photograph #22: A serpentine spring house in Westtown Township. The serpentine probably came from the Serpentine Ridge Quarry, located about a mile away.

Photograph #23: A serpentine carriage or wagon house, now a garage, in Westtown Township. The serpentine came from the Serpentine Ridge Quarry, located nearby.

Photograph #24: The Taylor-Whitcraft House (c. 1736) in West Goshen Township. This house was constructed from blue serpentine from Taylor's Quarry, originally part of the same farm property.

Photograph #25: The Thomas Smedley House (c. 1795) in Willistown Township. The serpentine may have come from the serpentine barrens located on the north side of present-day West Chester Pike.

Photograph #26: The William Cox House (c. 1802) in Willistown Township. The serpentine for this house came from a quarry originally part of the same farm property.

The Smedley House is an atypical four-bay Pennsylvania Farmhouse and the Taylor-Whitcraft and Cox Houses are good examples of the common practice to insert wall openings where it was most convenient for light and the accommodation of the interior spaces. But they all exhibit the simple symmetry, monochromy, and plain ornamentation so typical of folk architecture. The Taylor-Whitcraft House is constructed of blue serpentine from Taylor's Quarry.

Serpentine quarried from private quarries also was used for folk buildings located in the vicinity of the quarries. Such buildings included farmhouses, meeting houses, and inns. For example, the serpentine for the front elevation of the Collins Mansion (1727) in West Goshen Township[93] came from either Taylor's Quarry or Marshall's Quarry. The serpentine for the original section of the West Chester Friends Meeting House (1813), West Chester Borough[94] (see Photograph #27); Darlington's Inn (1823), Westtown Township[95] (see Photograph #28); and the Birmingham Orthodox Friends Meeting House (1845), Birmingham Township;[96] were all constructed of serpentine that probably came from the

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[93]"The Collins Mansion," Historic American Buildings Survey (Washington, D. C.: United States Park Service, [c. 1934]).

[94]Ibid., p. 241.

[95]James, Westtown, p. 19.

[96]Futhey & Cope, p. 234.

Photograph #27: West Chester Friends Meeting House. The eastern end of the 1813 green serpentine Meeting House is in the middle of the photograph. The western end of the 1813 Meeting House was torn down to make way for the 1868 brick addition. The blue serpentine addition on the east end of the 1813 Meeting House was added sometime between 1813 and 1868. For a close-up of the blue serpentine addition, see Photograph #29.

Photograph #28: Darlington's Inn (1823) in Westtown Township. The serpentine for this building probably came from the Serpentine Ridge Quarry, located nearby.

Serpentine Ridge Quarry in Westtown Township. All of these quarries were located within easy transportation reach of the buildings.

These buildings exhibit a diversity of Pennsylvania folk architecture. The two meeting houses are typical of the Quaker Meeting House type; they are plain, strictly functional, one-story stone structures. The West Chester Friends Meeting was expanded to the east sometime between 1813 and 1868[97] in a way compatible to the original meeting house. What makes this addition unusual is that it was constructed of blue serpentine, probably from Taylor's Quarry[98], whereas the original meeting house was constructed of green serpentine (see Photograph #29). The Collins Mansion is a good example of a three-bay Pennsylvania Farmhouse, again exhibiting simple symmetry and plain ornamentation. Darlington's Inn is an example of the five-bay Pennsylvania Farmhouse; but, it was constructed specifically as an inn.[99]

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[97]Futhey and Cope, p. 242.

[98]I have not been able to verify that the blue serpentine used in this building and Horticultural Hall (see pages 87-88) actually came from Taylor's Quarry, but I also have not unearthed any documentation contradicting this "common knowledge".

[99]James, Westtown, p. 20.

Photograph #29: Close-up of the West Chester Friends Meeting House showing the c. 1840s blue serpentine addition (left foreground) to the east end of the 1813 green serpentine Meeting House. Two more additions were made to the north side of the blue serpentine addition (right background), both of them showing blue serpentine bases.

The Conservative Building Period started because, apparently, serpentine was so admired in Chester County that by the 1840s wealthy residents were willing to marry the colorful serpentine stone with current architectural design elements to emulate fashionable mid-Victorian architectural design modes, even though structural polychromy was not yet fashionable. From about 1843 to 1867, serpentine was privately quarried for a number of large, rural houses that were of a more conservative architecture. Representative of these houses are the Francis and Thomazine Strode House (1843), Westtown Township[100] (see Photograph 30); the Isaac Norris House (c. 1855), Birmingham Township (see Photograph #31); and the Osbourne House (1855), Westtown Township[101] (see Photograph #32). All of these houses are located within about one mile from the Serpentine Ridge Quarry in Westtown Township from whence the serpentine probably came.

The Strode House was constructed at the cusp of the Greek Revival into the Italianate architectural fashion. It is a conservative interpretation of Greek Revival while the Norris and Osbourne Houses were constructed in a

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[100]James, Westtown, p. 22.
[101]Ibid., p. 21.

Photograph #30: The Francis and Thomazine Strode House (1843) in Westtown Township. The serpentine for this house came from the Serpentine Ridge Quarry, located about a mile away.

Photograph #31: The Isaac Norris House (c. 1855) in Birmingham Township. The serpentine for this house probably came from the Serpentine Ridge Quarry in Westtown Township.

Photograph #32: Osbourne House (1855), now known as Bournelyf, in Westtown Township. The serpentine for this house probably came from the Serpentine Ridge Quarry, located about a mile away.

conservative Italianate mode. They all substituted dressed serpentine Ashlar stone for the prescribed flat neutral-colored stucco wall surfaces. In the cases of the Norris and Osbourne Houses, instead of trim painted in a contrasting dark color, the trim was painted white to contrast with the green serpentine.

The Monumental Building Period started in 1867, when serpentine began being quarried on a more commercial basis for use as a building stone. Between 1867 and 1869, the Serpentine Ridge Quarry provided the serpentine for Philadelphia's Academy of Natural Sciences (1868) designed by James Hamilton Windrim[102] (1840-1919)[103] and the main section of Holy Trinity Episcopal Church (1868-1869) in West Chester, designed by the Rev. John Bolton (see Photographs #33 and #34).

While most of the monumental buildings constructed of serpentine in this period were designed with polychromatic palettes, not all of them were. For instance, Holy Trinity

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[102]George E. Thomas, Michael J. Lewis, and Jeffrey A. Cohen. Frank Furness: The Complete Works (New York: Princeton Architectural Press, 1991), p. 148, cat. 12.

[103]Sandra L. Tatman and Roger W. Moss, "Windrim, James Hamilton," Biographical Dictionary of Philadelphia Architects: 1700-1930 (Boston: G. K. Hall & Co., 1985), p. 871.

Photograph #33: Holy Trinity Episcopal Church in West Chester Borough. This is the first section that was designed by the Rev. John Bolton, Pastor of the Church, in 1868. The serpentine came from the Serpentine Ridge Quarry in Westtown Township.

Photograph #34: Holy Trinity's new "tower". The Williamson-designed tower was demolished in 1971 and replaced with this glass and wood-framed pavilion constructed on a serpentine foundation with red brick trim, in emulation of the Chapel of the Comforter (see pages 102-104). The foundation exhibits the simple but effective polychromy of red brick in contrast to green serpentine.

was designed with a monochromatic palette that was adhered to throughout its twenty-four-year construction period. Rev. Bolton's design was based on early, monochromatic English Gothic precedents "reminiscent of unpretentious English rural church[es]".[104] In 1889, the congregation hired architect T. Roney Williamson (1852-1896)[105] to design a tower (now demolished) for their church; they also hired him to design the 1892 choir building.[106] Williamson was a Philadelphia architect well-known for his inventive Queen Anne Revival designs[107] that incorporated a mix of polychromy and polytexture. But in the case of Holy Trinity, Williamson honored the original aesthete of Bolton's design and stuck to a monochromatic palette.

In fact, the first monumental building that was constructed of serpentine may very well be West Chester's Horticultural Hall (1848). It exhibits a monochromatic palette based on its blue serpentine[108] with which it is faced. The Hall was

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[104]Alice Kent Schooler, Livable West Chester An Architectural Overview (West Chester, Pa.: Chester County Historical Society, 1985), p. 63.

[105]Tatman and Moss, "Williamson, Thomas Roney," p. 856.

[106]Schooler, p. 63.

[107]Tatman and Moss, p. 856.

[108]The Hall's blue serpentine is probably from Taylor's Quarry.

designed by Thomas U. Walter[109] (1804-1887)[110] in the Romanesque Revival architectural mode then popular (see Photographs #35 and #36). This mode favored monochromatic palettes as did Walter himself.

The popularity of serpentine as a building stone increased rapidly once Joseph H. Brinton took over the operations of the Serpentine Ridge Quarry, which quickly became known as Brinton's Quarry. Starting in 1870, serpentine increasingly was being shipped out of Chester County; although, the stone was still being used in Chester County as well.[111]

Brinton was not adverse to advertising the major buildings for which he had supplied the serpentine as a way of generating more business for his quarry. The buildings he used for promotional purposes were all designed in the most fashionable architectural modes of the times, most of which were known for their emphasis on polychromy. These

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[109]Thomas U. Walter, Diary 5, Thomas U. Walter Collection (Philadelphia: The Athenaeum of Philadelphia, May, 1848), p. 1:189.

[110]James F. O'Gorman, Jeffrey A. Cohen, George E. Thomas, and G. Holmes Perkins, Drawing Toward Building: Philadelphia Architectural Graphics 1732-1986 (Philadelphia: University of Pennsylvania Press for the Pennsylvania Academy of Fine Arts, 1986), p. 76.

[111]To find out to where serpentine was shipped in this time period, see the spreadsheet in Appendix A.

Photograph #35: Horticultural Hall (1848) in West Chester Borough. The blue serpentine for this building probably came from Taylor's Quarry located just north of the Borough.

Photograph #36: Close-up of Horticultural Hall showing the blue coloring of its serpentine. Unfortunately, when exposed to direct and continual sunlight (the Hall faces west), blue serpentine tends to fade to a buff-green color. However, in certain kinds of lighting, such as indirect, the blue color can still be discerned.

buildings included the first four buildings at "the new University of Pennsylvania"[112] and the buildings located at the "State Normal School at West Chester".[113]

The first four buildings at the "new" University of Pennsylvania were College Hall (1871-1872),[114] Logan Hall (1873-1874),[115] the University Hospital (1873-1874),[116] and the Hare Medical Laboratory (1878);[117] two of which, College and Logan Halls, still stand (see Photographs #37 and #38). All of these buildings were designed by T. W. Richards (1836-1911)[118] in what he termed "the Collegiate Gothic Style".[119] Early in Richards's career, he was employed by Calvert Vaux who was well known for his polychromatic

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[112]Joseph H. Brinton, "Birmingham Serpentine Stone Quarries and Steam-power Stone Works [price list]."

[113]Joseph H. Brinton, "Building Stone The Brinton Serpentine Quarries West Chester, Pennsylvania," The Brinton Family Scrapbook, p. 49.

[114]Invitation to the Cornerstone-Laying Ceremony, "Papers Relating to College Hall Cornerstone-Laying and Inauguration," T. W. Richards Papers (Philadelphia: University of Pennsylvania Archives, June 15, 1871).

[115]George E. Thomas and David B. Brownlee, Building America's First University: An Historical and Architectural Guide to the University of Pennsylvania (Philadelphia: University of Pennsylvania Press, 2000), p. 173.

[116]Pepper, William, M. D., "An Account of the Inauguration of the Hospital of the University of Pennsylvania, Containing the Addresses of His Excellency Governor Hartranft and Hon. William A. Wallace, with a Description of the Plans of the Building and an Appeal to the Public," (Philadelphia: Collins, Printer, 1874), from T. W. Richards Papers (Philadelphia: University of Pennsylvania Archives).

[117]Thomas and Brownlee, p. 55.

[118]Tatman & Moss, "Richards, Thomas Webb", p. 659.

[119]Invitation to the Cornerstone-Laying Ceremony.

Photograph #37: East elevation of the East Wing of College Hall (1871-1872), University of Pennsylvania, Philadelphia. In urban settings, serpentine deteriorates badly. The University, in its desire to preserve the first building erected on its "new" campus in West Philadelphia, has undertaken to resurface the stone in an attempt to halt its deterioration. Unresurfaced serpentine stone can be seen in the middle of the photograph and the resurfaced stone can be seen on either side

Photograph #38: Logan Hall (1872-1873), formerly Medical Hall, University of Pennsylvania, Philadelphia. According to Thomas and Brownlee, Logan's exterior was restored in 1988-1995, so what you are seeing is not necessarily the original or actual color of the stone [p. 173].

Victorian Gothic buildings.[120] Vaux's influence on Richards can be seen in Richards's penchant for polychromatic palettes based on structural polychromy. This penchant is exhibited by the early Penn buildings.

College Hall's polychromy starts with its basement foundation that is fully exposed on the east, south, and west elevations and is laid in Leiperville Graystone capped with a water table course of Hummelstown Brownstone around the entire building. All the door and window sills were laid in the gray stone, also. The exterior walls were laid in green serpentine and all of the trim, including cornices, buttress cappings, gable cappings, sill and belt courses, and arches, were laid in Massillon Ohio stone.[121] The whole was topped by a blue and red slate roof.[122] As a contrast to this palette, the entrance porch was laid up in

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[120]Thomas and Brownlee, p. 50.

[121]T. W. Richards, "Specification for the Construction of a Building for the Collegiate and Scientific Departments of the University of Pennsylvania, on Locust Street, bet. 34th & 36th Streets, Philadelphia" (Philadelphia: Collins, Printer, 1971), p. 3; and "Specification of the Materials and Workmanship Required in the Erection of a College Building for the Medical Department of the University of Pennsylvania, Upon a Lot of Ground, Bounded by 34th and 36th Streets, and Locust and Spruce Streets, in the City of Philadelphia, in Accordance with the Accompanying Plans, Elevations, Etc., of Thomas W. Richards, Architect, and Approved by the Building Committee" (Philadelphia: Collins, Printer, 1873), p. 6, both from "Articles of Agreement and Specifications for College Hall, Medical Hall and University Hospital, 1871-1875," T. W. Richards Papers (Philadelphia: University of Pennsylvania Archives).

[122]Thomas and Brownlee, p. 57.

Scotch Granite (for the columns), Massillon Ohio stone, Franklin Graystone, and Brownstone. Except for the front porch, Logan Hall (originally Medical Hall), the Hospital Building, and the Hare Building followed the same design palette and pattern as College Hall.[123]

Between 1871 and 1904, virtually all of the buildings on the campus of West Chester Normal School (now West Chester University) were constructed of serpentine. These buildings included Old Main (1871-1911), the Boiler Building (1889), the Old Gymnasium (1889), the President's House, also known as "Green Gables", (1891-1892), Recitation Hall (1891-1893), the Model (Demonstration) School (1899), and the Old Library (1902-1904).[124] Three of these buildings, Recitation Hall, the Demonstration School, and the Old Library still stand (see Photographs #39, #40, and #41). What's interesting to note here is that by 1910,

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[123]Medical Hall Specifications, ps. 5-6; and "Specification of the Materials and Workmanship Required in the Erection of a Hospital for the University of Pennsylvania", ps. 2-3, from "Articles of Agreement and Specifications for College Hall, Medical Hall and University Hospital, 1871-1875," T. W. Richards Papers (Philadelphia: University of Pennsylvania Archives).

[124]"Building Stone The Brinton Serpentine Quarries West Chester, Pennsylvania," The Brinton Family Scrapbook, p. 49; and Richard J. Webster, "West Chester State College Quadrangle Historic District Nomination," National Register of Historic Places (Washington, D. C.: United States Park Service, 1981), section 8, ps. 1-3, photocopy from Harrisburg, Pa.: Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission.

Photograph #39: Recitation Hall (1891-1893), West Chester Normal School (now West Chester University) in West Chester Borough. The serpentine for this building came from Brinton's Quarry in Westtown Township.

Photograph #40: The Model School (1899), also known as the Demonstration School, West Chester Normal School, now West Chester University, in West Chester Borough. The serpentine for this building came from Brinton's Quarry in Westtown Township.

Photograph #41: The Library (1902-1904), now known as the Old Library, West Chester Normal School, now West Chester University, in West Chester Borough. The serpentine for this building came from Brinton's Quarry in Westtown Township.

West Chester's campus was virtually a map delineating the changes in architectural fashions which led to the decline in the popularity of serpentine as a building material.

Old Main (see Photograph #42) was designed by Addison Hutton (1834-1916)[125] in the Second Empire architectural mode and exhibited a subtle polychromy through its use of buff stone trim and prominent red brick chimneys to contrast with the green serpentine. As an architect, Hutton tended to be more comfortable with the subtle polychromy of the mid-1800s architectural aesthetes, rather than with the more boisterous polychromy of the High Victorian Gothic mode. At least eight additions, two by Hutton, one by T. Roney Williamson, were made to Old Main between 1871 and 1911, only one of which was not constructed of serpentine (it was constructed of brick). In the end, Old Main stretched 256 feet along High Street and extended back 175 feet, making it possibly the world's largest serpentine building.[126]

The Boiler Building was probably built in a compatible mode to Old Main: little is known about this building,

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[125]Tatman and Moss, "Hutton, Addison", p. 401.
[126]Webster, section 8, p. 1.

Photograph #42: "Old Main" (1871-1911), West Chester Normal School, now West Chester University, in West Chester Borough. This photograph is of a print of a Barclay Rubincam painting. The serpentine came from Brinton's Quarry in Westtown Township.

including what exactly it looked like.[127] The Old Gymnasium and the President's House (known locally as "Green Gables") were both designed by T. Roney Williamson in a "picturesque" mode.[128]

Recitation Hall was also designed by T. Roney Williamson and was supposed to be executed in the popular Collegiate Gothic mode. But as Dr. Richard Webster explains in his National Register Nomination for the West Chester State College (yet another name for West Chester University) Quadrangle Historic District, "Recitation was an institutional low-bid structure. The college could not afford to imitate either castle or cathedral. The contention between budget and taste was compromised by virtually pasting onto the large, utilitarian building engaged late-gothic minarets over the east entrances and the center cross-gable with its limestone shield and escroll."[129] And its polychromy is virtually non-existent. This building was a portend of the times to come. The rest of the buildings on West Chester's campus will be discussed later in this Chapter.

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[127]Ibid.
[128]Ibid., section 8, ps. 1-2.
[129]Ibid., section 8, p. 2.

Using the above mentioned campuses for promotional advertising, as well as well-placed advertisements in such trade magazines as The Monumental News of Chicago,[130] Brinton was able to attract the interest of architects, stone brokers, and stone contractors located up and down the eastern seaboard and as far away as Birmingham, Alabama[131] and Chicago, Illinois.[132] For instance, the famous Chicago architectural firm of Burnham and Root (firm dates, 1873-1891)[133] ordered serpentine for a house they had designed for a Mr. George H. Hankins or Hawkins.[134] For the most part, the buildings for which these architects, stone brokers, and contractors were seeking serpentine were located east of the Mississippi,[135] but as far north as Boston, Massachusetts[136] and as far south as Jacksonville, Florida.[137]

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[130]The Monumental News, "Letters to Mr. J. H. Brinton," Westtown Township Collections Boxes (December 7, 1892 & February 24, 1893).

[131]Thompson Decker Construction Co., "Letters to Joseph H. Brinton" Westtown Township Collections Boxes (November 21, 1892 & January 18, 1893).

[132]Joseph H. Brinton, "Letter" Ms #76588 (1878?), p. 246.

[133]Maddex, Diane, ed., Master Builders: A Guide to Famous American Architects (Washington, D. C.: The Preservation Press, 1985), p. 102-103.

[134]Joseph H. Brinton, "Letters to Burnham and Root" Ms #76588 (April 4, [1878?], February 12, [1879?], and November 33, [1879?]), ps. 77, 92, and 108. These are handwritten letters; the handwriting is hard to read, making the last name of the client hard to decipher.

[135]For more information, see the spreadsheet in Appendix A.

[136]Oxford Press (Oxford, Chester County, Pa.), April 16, 1873.

[137]Daily Local News, January 20, 1879.

What may have attracted the architects who used the serpentine to serpentine was its color, especially when in use with other colors. In 1874, the architectural firm of Furness and Hewitt, well-known for their use of a polychromatic palette, specified green serpentine stone contrasted by buff limestone and brown sandstone trimmings and blue-grey slate for the roof for their design of the Memorial Church of the Holy Redeemer (now the Nineteenth Street Baptist Church) in Philadelphia (see Photograph #43).[138]

Architect S. Edwin Tobey of Boston, Massachusetts picked up on the contrast of light-colored stone against the vivid serpentine. He wanted Brinton to send him prices for serpentine both with window caps and sills and without because he "may desire to use some light stone as trimming to heighten the effect of your [Brinton's] stone."[139] In fact, S. H. Durham, architect from South Bend, Indiana, expressed a desire to Brinton to use serpentine stone for

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[138]Molly Sheehan, author, "The Nineteenth Street Baptist Church: Preservation and Restoration Made Economically Feasible" draft thesis (Philadelphia: Historic Preservation Program, University of Pennsylvania, 2001), interview by Jane E. Dorchester, March 20, 2001.

[139]S. Edwin Tobey, "Letter to Mr. J. H. Brinton," Westtown Township Collections Boxes (July [?], 1893).

Photograph #43: Memorial Church of the Holy Redeemer (1874), now known as the Nineteenth Street Baptist Church, in Philadelphia. The original buff limestone trim can be seen around the front door and the brown sandstone trim can be seen in a band under the tripartite window and in the band above it that bisects the tripartite window.

the main part of a building to be constructed in South Bend with Conestoga Pink Sandstone for its steps.[140]

A favorite combination with architects appears to have been using granite and serpentine together, as is witnessed by James S. Butler's letter dated November 3, 1892 in which he states that "I have received the contract to furnish the granite and greenstone for a new schoolhouse in Salem . . ."[141] And some architects were interested in using serpentine in a polytextural way, rather than a polychromatic one. For instance, the Laidlaw Brothers, architects from Marion, Indiana, explained that they were thinking of using cut serpentine for all the trimmings on a high school, to be built in Wabash, Indiana, and leaving the body "rough faced" because "we think it will make enough contrast and be very pretty."[142]

For more conservative architecture, green serpentine with Philadelphia red brick trim was once ubiquitous. It became a favorite device to achieve instant polychromy in the most

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[140]Joseph H. Brinton, "Letter to S. H. Durham," Brinton Family Scrapbook (July 20, 1893[?]), p. 8.

[141]James S. Butler, "Letter to Mr. Joseph H. Brinton," Westtown Township Collections Boxes (November 3, 1892). The State in which Salem is located is not identified.

[142]Laidlaw Brothers, "Letter to J. H. Brinton", Westtown Township Collections Boxes (March 2, 1893).

efficient and simple manner. One of the last surviving examples of this combination is the Chapel of the Comforter (now the Chapel of the Ascension) at West Chester's Holy Trinity Episcopal Church. The chapel was erected in 1914 and constructed in the, by then old-fashioned, Queen Anne Revival mode with red brick window and door trim (see Photograph #44).[143]

The Final Building Period in serpentine use started around 1895. Two of the few monumental buildings erected during this period are located on West Chester University's campus. They represent the conflict between the need to try to make the expanding campus uniform in appearance and the desire to met the new architectural aesthete of the White City Movement. This conflict produced the final two buildings on what is generally referred to as "the Quad" - the original Normal School campus. The Model School (see Photograph #40) was erected in 1899 according to the designs of Baker and Dallett (firm dates, 1888-1912),[144] an architectural firm from Philadelphia well-known for its

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[143]Constance Allen, Coordinator, "The Churches of West Chester," ed. Paul Rodebaugh, Jeffrey Rollison, & Eric Chandlee Wilson, West Chester, the First 200 Years: 1799-1999 (West Chester, Pa.: The Bicentennial History Committee, 1999), ps. 35-36.

[144]Tatman and Moss, "Baker, Louis Carter, Jr.", p.24.

Photograph #44: The Chapel of the Comforter (1914), now the Chapel of the Ascension, Holy Trinity Episcopal Church in West Chester Borough. The serpentine for this building probably came from Brinton's Quarry.

designs based on early American and classical precedents. In answer to the nationalism sweeping the country at the time, they designed the School in the Georgian Revival mode.[145] The Georgian Revival married early American architectural precedents with the White City aesthete of a quieter, if not monochromatic, palette (see Photograph #45). In the Model School's case, the architects emulated the earlier conservative Italianate houses in the vicinity and ordered that the School's trimmings be painted white.

In 1902 by Baker and Dallett designed the Old Library (see Photograph #41). Here the White City Movement came into its own. Baker and Dallett designed a handsome Classical Revival building complete with a tetrastyle Ionic portico - all in serpentine with white trim.[146]

By World War I, serpentine's popularity as a building stone had come full circle. It was again being used on buildings that were conservative at best, if not down right folk architecture: P. J. McCormick, the stone contractor who was leasing Brinton's Quarry, built a warehouse in West

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[145]Webster, section 8, p. 2.
[146]Webster, section 8, p. 3.

Photograph #45: A good example of a Georgian Revival house. It is located in Philadelphia.

Chester out of serpentine in 1907.[147] In 1931, Brinton's Quarry was shut down for good, and as far as is known, no buildings after this time were constructed from newly quarried serpentine. The Final Building Period in the use of serpentine as a building material had come to a close.

[147]Daily Local News, December 26, 1907.

CHAPTER 7: CONCLUSION

In conclusion, serpentine is an unusual green rock that can be found in only a few places on this planet (see Photograph #46). Chester County, Pennsylvania is one of those places and it is one of the few places in this country which has exploited its cache of serpentine for building purposes.

Three kinds of buildings have been constructed of serpentine over the years: folk, conservative, and monumental.[148] From the early Eighteenth Century, serpentine was used as a building stone for farm houses, outbuildings, meeting houses, and other folk buildings (see Photograph #47). In the Nineteenth Century, as this country became more prosperous and architectural fashion moved away from classical precedents and towards a more picturesque design theory, Chester Countians began to marry serpentine stone with fashionable architectural designs to produce conservative architecture (see Photograph #48). This penchant for using a brightly colored stone in place

[148]See Appendix A for a spreadsheet delineating all of the hard evidence relating to when Serpentine was used as a material building, by whom, where, and from which quarries.

Photograph #46: Serpentine rock in and on the ground at Brinton's Quarry, showing its vivid green color.

Photograph #47: Serpentine farmhouse in Goshenville, East Goshen Township. The serpentine has faded to a light greenish-yellow and may have been quarried at a nearby farm quarry.

Photograph #48: The Quarry House in Westtown Township. Joseph Brinton added a Queen Anne Revival addition to an existing farmhouse. The serpentine for both the original house and the addition came from the Serpentine Ridge, later Brinton's, Quarry, located just up the road from the house.

of a more subtle palette as the fashionable architecture called for may have encouraged Joseph H. Brinton to lease the Serpentine Ridge Quarry in 1869 in order to sell serpentine stone as a suitable and, more importantly, fashionable building material.

Joseph Brinton and his entrepreneurial spirit played an important role in the evolution of serpentine as a building material. He not only set an example that other quarry operators tried to follow, but he advanced the technology of quarrying with the invention of several stone quarrying tools specific for the quarrying and dressing of serpentine. He was also a shrewd businessman and keen salesman: he never missed an opportunity to promote his stone.

Even more colorful architecture began gaining in popularity starting in the 1860s and culminating in the extravagant polychromy of the 1870s and 1880s. In Chester County, the avant-garde already had married serpentine with the early bi-colored architectural designs by the time High Victorian Gothic became the popular architectural aesthete. As the High Victorian Gothic gained in popularity, the demand for

serpentine as a building material for monumental buildings also grew (see Photograph #49), encouraging Joseph Brinton in his quarrying endeavors. He saw an opportunity to take advantage of the popularity of polychromatic architecture and bought the Serpentine Ridge Quarry (renamed Brinton's Quarry) at the right time (circa 1870) and began promoting serpentine as the right building stone for the times. Subsequently, Brinton ran the only commercially viable serpentine quarry in the County. There were other serpentine quarries in Chester County, but they were either not run solely as commercial enterprises for the purpose of extracting the serpentine for building uses or were not run nearly as successfully as Brinton's Quarry was. One reason for Brinton's success was that he promoted serpentine to architects, agents, and contractors all over the eastern seaboard, and so consequently, he shipped serpentine from his quarry all over the eastern half of the United States.

There are at least two reasons that the popularity of serpentine waned. One of them is that transportation increasingly became a problem because the cost of shipping both by wagon and by rail continued to rise, especially after the labor unrests of the mid-1880s. Brinton's

Photograph #49: The west elevation of the University of Pennsylvania's Logan Hall (1872-1873).

Quarry, the main supplier in Pennsylvania of serpentine as a building stone, was located at least three miles from the nearest rail line, compounding the expense of shipping by rail with the expense of shipping by wagon. By the late 1880s, no rail line had been laid close enough to the Quarry to help defray the cost of shipping by eliminating the need to ship the stone by wagon to the nearest railroad. Consequently, the cost of serpentine went up and could no longer compete with less costly, more easily shipped stones offered by other, more strategically located quarries.

And second, and more importantly, the introduction of the White City Movement in the early 1890s effectively eclipsed the use of polychromatic palettes, even in aesthetes such as the Queen Anne Revival and early Georgian Revival, which originally favored some type of polychromy. As the White City Movement gained momentum, not only did picturesque design modes appear gauche, but the boisterous color schemes and unusually colored building materials favored by the architects of the picturesque began to be seen first as old-fashioned, and then as downright ugly. By 1919, the Building Review of the South could quote an architect who

complained that, "'the usual attempt to use serpentine or olive-green or green-gray stone in city structures is distinctly unsuccessful as far as the writer has been able to judge.'"[149] It wasn't just serpentine that fell out of favor, the color green was no longer seen as peaceful or tranquil or serene.

This study of the evolution of serpentine as a building material has uncovered a wide variety of information about serpentine as a rock, as a building stone, and as an instrument in the expression of a specific architectural aesthete. The conclusions drawn in this paper are preliminary at best. For a definitive history of serpentine as a building stone and the evolution of its use as a building material, more in-depth research needs to be done.

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[149]"More Color in Architecture," Building Review of the South, vol. 8 (August 1919) p. 14.

APPENDIX A

APPENDIX A: BUILDINGS CONSTRUCTED OF SERPENTINE STONE

A few words about this spreadsheet. First, all of the information in the following spreadsheet was gleaned from newspaper articles, correspondence to and from Joseph H. Brinton, advertisements by Brinton for his quarries, and historical atlases; and secondary sources such as maps, histories of townships, Futhey and Cope's monumental and still definitive The History of Chester County, Pennsylvania, geological and mineralogical sources, and architectural history sources. All of these sources are listed in the Bibliography in Appendix D. I have endeavored to verify these sources, especially the secondary ones, by trying to find at least one other source that gave the same information. This was not always possible; in which case, I have tried to indicate with a "?" that I'm not certain of the accuracy of the information. I have included information that I wasn't able to verify because someone else might be able to verify it and, there is so little known about serpentine buildings that *any* information, even if it proves to be inaccurate, could be helpful to future researchers. In some cases I

was able to verify the existence of a building simply by driving by it!

The only source not listed in the Bibliography is my own personal knowledge of serpentine buildings in Chester County, especially southeastern Chester County where I grew up and have spent most of my adult life. My memories were confirmed (or not, as the case may be) by several car trips through the southeastern Chester County countryside, now sadly suburbanized, for the express purpose of seeking out serpentine buildings. In this case, those buildings that were verified by a windshield survey have been given "circa" dates with a "?"; in most cases, no further research has been done.

And second, this spreadsheet is not meant to be definitive. It is meant to be the foundation for a far more detailed and far more comprehensive spreadsheet listing all of the serpentine buildings known to have been erected at least in Southeastern Pennsylvania over the course of time, regardless of whether they still exist or not.

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
No Date	1.	Devon Inn	Unknown	Easttown Twnshp.	Devon	
	2.	Birmingham Friends Cemetery Wall	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
	3.	Grace Church	Unknown	Wilm., Del.	Brinton's	First building in which "Birmingham" serpentine contrasted w/sandstone trimmings?
	4.	Beth Eden Baptist Church	Unknown	Broad & Spruce Sts., Phila.	Brinton's	
	5.	Baptist Church	Unknown	Masters St. below Broad St., Phila.	Brinton's	
	6.	Second Empire Bldg.	Unknown	Baltimore Ave. & Orange St., Media, Pa.	Unknown	Slowly being resurfaced with brick, window headers left in serpentine
1723-1740?	7.	Daniel Hoopes Hse.	Unknown	Westtown Twnshp.	Serpentine Ridge?	
1727	8.	Collins Mansion	Unknown	W. Goshen Twnshp.	Taylor's?	Façade only
c. 1736	9.	Taylor-Whitcraft Hse.	Unknown	W. Goshen Twnshp.	Taylor's	
1784?	10.	Isaac Sharpless Birthplace	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
c. 1785?	11.	H. Davis Hse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
c. 1790?	12.	D. T. Jones Hse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
c. 1790?	13.	H. Davis Hse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
1795	14.	Thomas Smedley Hse.	Unknown	Willistown Twnshp.	Serpentine Barrens on N side W. Chester Pike?	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1800?	15.	Spackman Corner Chimney Hse.	Unknown	Thornbury Twnshp.	Serpentine Ridge	
c. 1800?	16.	Alfred L. Elwyn Hse?	Unknown	E. Bradford Twnshp.	Serpentine Ridge?	
c. 1800?	17.	Taylor Hse?	Unknown	W. Goshen Twnshp.	Marshall's or McCall's?	Green serpentine building, in spite of its proximity to Taylor's Quarry
c. 1800?	18.	Columbian Fathers	Unknown	E. Goshen Twnshp.	Unnamed farm quarry in E. Goshen?	
c. 1800?	19.	Crebilly Farm Main Hse.	Unknown	Westtown Twnshp.	Serpentine Ridge	Since demolished
c. 1800?	20.	Goshenville Hse.	Unknown	E. Goshen Twnshp.	Unnamed farm quarry in E. Goshen?	
c. 1802	21.	William Cox Hse.	Unknown	Willistown Twnshp.	Unnamed quarry on original farm	
1805?	22.	Joshua & Lydia Hunt Hse?	Unknown	Westtown Twnshp.	Serpentine Ridge	
c. 1805	23.	Thomas Hutchison Hse.	Unknown	Willistown Twnshp.	Unnamed quarry on original farm	
c. 1805?	24.	Crebilly Farm Tenant Hse?	Unknown	Westtown Twnshp.	Serpentine Ridge	Since demolished?
c. 1810?	25.	Green Bank Farmhouse	Unknown	E. Bradford Twnshp.	Serpentine Ridge?	
1813?	26.	High Street Friends Meeting Hse.	Unknown	W. Chester Boro	Serpentine Ridge or Marshall's ?	Since partly demolished
1823?	27.	Darlington's Inn	Unknown	Westtown Twnshp.	Serpentine Ridge?	
c. 1830?	28.	Goshen Orthodox Friends Meeting Hse.	Unknown	E. Goshen Twnshp.	Unnamed farm quarry in E. Goshen?	
1837?	29.	Alban Seal Hse.	Unknown	Birmingham Twnshp.	Serpentine Ridge?	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
c. 1840?	30.	High Street Friends Meeting Hse.	Unknown	W. Chester Boro	Taylor's?	East addition to 1813 Meeting Hse.
c. 1842?	31.	Birmingham LaFayette Cemetery Gate Posts	Unknown	Birmingham Twnshp.	Serpentine Ridge?	Original gate posts, the current gates & posts are iron
1843?	32.	Francis & Thomazine Strode Hse.	Unknown	Westtown Twnshp.	Serpentine Ridge	
1844?	33.	West Chester Orthodox Friends Meeting Hse.	Unknown	W. Chester Boro	Serpentine Ridge or Marshall's ?	Since demolished
1845?	34.	Birmingham Orthodox Friends Meeting Hse.	Unknown	Birmingham Twnshp.	Serpentine Ridge?	Now a residence
1848	35.	Horticultural Hall	Thomas U. Walter	W. Chester Boro	Taylor's?	Façade only?
1850?	36.	West Chester Orthodox Friends School	Unknown	W. Chester Boro	Serpentine Ridge or Marshall's ?	Since demolished?
c. 1850?	37.	Garrett Hse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
1853?	38.	William Forsythe Hse.	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
1854?	39.	Birmingham Orthodox Friends School	Unknown	Birmingham Twnshp.	Serpentine Ridge?	Now a residence
1855?	40.	Osbourne Hse.	Unknown	Westtown Twnshp.	Serpentine Ridge	
c. 1855?	41.	Isaac Norris Hse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
c. 1860?	42.	Kite Hse., later Fern Bank Stock Farmhouse?	Unknown	Birmingham Twnshp.	Serpentine Ridge?	
c. 1860-1873?	43.	Quarry Hse.	Unknown	Westtown Twnshp.	Serpentine Ridge, later Brinton's	
c. 1865?	44.	The Farmers Bank Bldg.	Unknown	W. Chester Boro	Serpentine Ridge?	Since partly demolished
1868	45.	Academy of Natural Sciences	James Hamilton Windrim	Phila.	Serpentine Ridge	Since resurfaced

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1868-1892	46.	Holy Trinity Episcopal Church	John Bolton & T. Roney William-son	W. Chester Boro	1868-1869, Serpentine Ridge; 1869-1892, Brinton's	Bolton designed 1868 Main Section; Williamson 1889 Tower & 1892 Choir Bldg.; Tower demolished 1971
c. 1870?	47.	"The Four Sisters"	Addison Hutton?	W. Chester Boro	Serpentine Ridge or Marshall's ?	
1871-1872	48.	College Hall, UPenn	T. W. Richards	Phila.	Brinton's?	
1871-1911	49.	"Old" Main, W. Chester Normal School	Addison Hutton & T. Roney William-son	W. Chester Boro	Brinton's	Demolished in early 1970s
1872-1873	50.	Medical Hall (now Logan Hall), UPenn	T. W. Richards	Phila.	Brinton's?	
1872-1873?	51.	Sybilla Brinton Hse.	Unknown	W. Chester Boro	Brinton's	
1873?	52.	Business Hse.	Unknown	Burned district, Boston	Brinton's	
c. 1873?	53.	C. R. DeHaven Hse?	Unknown	Thornbury Twnshp.	Brinton's?	
1873-1874	54.	UPenn Hospital Bldg	T. W. Richards	Phila.	Brinton's?	Since demolished
1874	55.	Memorial Church of the Holy Redeemer	George W. Hewitt?; Furness & Hewitt	19th St. twixt Titan & Wharton Sts., Phila.	Brinton's?	Now the 19th. St. Baptist Church; since resurfaced
1874-1878?	56.	Dilworthtown Presbyterian Church	Unknown	Birmingham Twnshp.	Brinton's	
1875?	57.	University Laboratory Building	Unknown	Balti. or Phila.	Carter & Reynold's Serpentine	Not sure to which University this refers
c. 1875?	58.	Clifton-Alden Train Station	Unknown	Boro of Alden or Clifton Heights, Delaware County?	Unknown	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1878	59.	Nottingham Presbyterian Church	Unknown	W. Nottingham Twnshp.	Dunlap and Martin's	
1878?	60.	Central Presbyterian Church	Unknown	Eutaw Square, Balti.	Brinton's	
1878?	61.	Lafayette Square Presbyterian Church	Unknown	Lafayette Square, Balti.	Brinton's	
1878?	62.	Commodore Reed's House	Unknown	Washington D. C.	Brinton's	"Gothic Front"
1878?	63.	Bldg.	John A. Bering (or Baring)	Lancaster, Pa.	Brinton's	
1878 or 1879?	64.	Charles R.? Peadle, Peasler, Peasles, or Peaslee Hse.	Charles J. Clarke	Louisville	Brinton's	
1878 or 1879?	65.	Hse.	Charles Early?	Washington D. C.	Brinton's	Early may be contractor or owner
1878 or 1879?	66.	Bldg.	T. Snulton Howton?	Richmond	Brinton's	Name of architect more or less unreadable
1878 or	67.	Bank	John Roberts?	Racine	Brinton's	Roberts may be contractor
1878 or 1879?	68.	George Flevidge? Hse.	Unknown	Sunbury, Pa.	Brinton's	Name of client hard to read
1878 or	69.	Bldg.	J. W. Yost	Columbus	Brinton's	
1878 or	70.	J. L. Sebring Hse.	Mr. Cutler	Kalamazoo	Brinton's	
1878 or 1879?	71.	George H. Hankin or Hawkins Hse.	Burnham & Root	Chicago	Brinton's	
1878 or 1879?	72.	E. T.? Knoble? Hse.	Unknown	Lebanon, Pa.?	Brinton's	Architect, whose name unreadable, from Lebanon, house may not be
1879?	73.	Bldg.	Rotch & Tilden	Boston	Brinton's	
1879?	74.	Hotel	Unknown	Jackson-ville	Brinton's	For trimmings only

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1879?	75.	Hse.	Unknown	Phoenix-ville Pa.	Brinton's	Façade only
1879?	76.	Bldg.	Unknown	Washington D. C.	Brinton's	
1879?	77.	Presbyterian Church	Unknown	21st & Christian Sts., Phila.	Brinton's	Since resurfaced
1879?	78.	Wilmington Courthouse	Unknown	Wilm., Del.	Brinton's	
c. 1880?	79.	Dilworthtown Presbyterian Church Manse	Unknown	Birmingham Twnshp.	Brinton's	Blt. soon after Church erected
1880?	80.	2 Rows or Blocks of Buildings	Unknown	W. Chestnut St., Phila.	Brinton's	
1881?	81.	Various Bldgs.	Unknown	Phila.	Brinton's	
1881?	82.	17 Various Bldgs.	Unknown	Chicago; Danville, Pa.?; Washington D. C.; Balti.; and Phila.	Brinton's	
1881?	83.	Churches, Hses, Various Bldgs., etc.	Unknown	Pullman, Ill.	Brinton's	Town est. by Pullman Palace Car Co. of Chicago
1881?	84.	Hse.	Unknown	Chicago	Brinton's	Lincoln Park on N., and Lake Michigan on E.
1881?	85.	Union League Bldg.	Unknown	Chicago	Brinton's	
1882?	86.	Pleasant Grove School	Unknown	Westtown Twnshp.	McClure's	
1882?	87.	Public Bldgs.	Unknown	Chicago	Brinton's	
1882?	88.	3 Hses.	Unknown	Chicago	Brinton's	
1882?	89.	Hse.	Unknown	Grand Rapids	Brinton's	
1882?	90.	Western Publishing Company Bldg.	Unknown	Erie & Dearborn Sts., Chicago	Brinton's	
1882-1883?	91.	Good Will Steam Fire Engine Bldg.	Unknown	Pottstown, Pa.	Brinton's	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1883?	92.	Bldg.	Unknown	Kalamazoo	Brinton's	
1883?	93.	Episcopal	Unknown	Columbus	Brinton's	
c. 1883?	94.	Samuel Sharpless Hse?	Unknown	Thornbury Twnshp.	Brinton's?	
c. 1883?	95.	Thomas Hogue Store	Unknown	W. Chester Boro	Brinton's?	Since remodelled
1885?	96.	Bldg.	Unknown	New Orleans	Brinton's	
1885?	97.	Haddonfield Baptist Church	Unknown	Haddon-field, NJ?	Brinton's	
1887?	98.	Hse.	Unknown	Pittsburgh	Brinton's	
1887?	99.	Bldg.	Unknown	Columbus	Brinton's	
1888?	100.	Bldg.	Unknown	Chicago	Brinton's	
1889	101.	Boiler Bldg., W. Chester Normal School	Unknown	W. Chester Boro	Brinton's	Since demolished
1889	102.	"Old" Gymnasium, W. Chester Normal School	T. Roney William-son	W. Chester Boro	Brinton's	Since demolished
1891-1892	103.	"Green Gables", W. Chester Normal School	T. Roney William-son	W. Chester Boro	Brinton's	First President's Hse. for WCSC; since demolished.
1891-1893	104.	Recitation Hall, W. Chester Normal School	T. Roney William-son	W. Chester Boro	Brinton's	
1892?	105.	Methodist Episcopal Church	Weary & (George W.) Kramer?	Rochester	Brinton's	
1892?	106.	House	Unknown	Plainfield NJ	Brinton's	
1892?	107.	House	Unknown	Newport, RI?	Brinton's	
1892?	108.	S. J. Cushman's Hse.	Unknown	Rochester	Brinton's	
1892?	109.	Church Tower	Atkinson & Myhlertz	Florida?	Brinton's	Location of church unknown; may not be Florida

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1892?	110.	Mr. Sprenger's Hse.	Unknown	Lancaster, Pa.?	Brinton's	Contractor from Lancaster, house may not be
1892?	111.	Hse.	Orf Brothers?	Minne-apolis	Brinton's?	House definitely constructed of serpentine, but from whence unclear
1892?	112.	Row of Hses.	W. P. Pembroke	Washington D. C.	Brinton's	
1892?	113.	Mr. Orr's Hse.	Percival & Orr	Buffalo	Brinton's	
1892-1893?	114.	Schoolhouse	E. W. Halton or Falton?	Salem, [NJ?]	Brinton's	No State is cited for location; James S. Butler is writing per E. W. Halton or Falton
1892 or 1893?	115.	Methodist Church	Unknown	Birmingham Conn.?	Brinton's	Not sure where this Birmingham is
1892 or	116.	Congregation-al Church	Unknown	Holyoke, Mass.	Brinton's	May not have been built
1892 or 1893?	117.	Catholic Church	Unknown	Spring-field, Mass.	Brinton's	May not have been built
1892 or 1893?	118.	Catholic Church	Unknown	S. Norwalk?, Mass.?	Brinton's	May not have been built
1892 or 1893?	119.	Hse.	C. C. Thayer	New Castle, Pa.?	Brinton's	Thayer from New Castle, house may not be
1893?	120.	Bldg.	Jouvenal & Smith?	Washington D. C.	Brinton's	Jouvenal & Smith may not be architects, & building may not have been constructed
1893?	121.	Church	Weary & Kramer	Kingston, NY	Brinton's	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1893?	122.	Congregational (maybe) Church	Weary & Kramer	Asbury Park, NJ	Brinton's	
1893?	123.	Church	Unknown	Washington D. C.	Brinton's	
1893?	124.	High School	Laidlaw Bros.	Wabash, Ind.	Brinton's	
1893?	125.	Webber Hse. & Stable	S. Edwin Tobey	Boston?	Brinton's	Architect from Boston, house might not be
1893?	126.	Bldg.	Unknown	Salem, Mass.	Brinton's	
1893?	127.	Bldg.	Unknown	Indiana	Brinton's	
1893?	128.	Church	Unknown	New Castle, Pa.	Brinton's	
1893?	129.	Bldg.	S. H. Durham	South Bend, Ind.	Brinton's	Trimmed w/Conestoga Pink Sandstone
1895?	130.	Various Bldgs.	Unknown	Ohio, Illinois, & New Jersey	Brinton's	
1899	131.	Demonstration School, W. Chester Normal School	Baker & Dallett	W. Chester Boro	Brinton's	
1900?	132.	Bldg.	Unknown	New Jersey	Brinton's	
1902?	133.	Hse.	Unknown	Lynchburg	Brinton's	
1902-1904	134.	"Old" Library, W. Chester Normal School	Baker & Dallett	W. Chester Boro	Brinton's	
1906?	135.	Church	Unknown	Cleveland	Brinton's	
1906?	136.	Hse.	Unknown	Cleveland	Brinton's	
1906?	137.	Church	Unknown	Liverpool, Ohio	Brinton's	
1907?	138.	Warehouse	Unknown	W. Chester Boro	Brinton's	Built by contractor P. J. McCormick who was running Quarry at time
1908	139.	Star Social Club	Unknown	W. Chester Boro	Brinton's?	

BUILDINGS CONSTRUCTED OF SERPENTINE STONE

DATE	NO.	NAME OF BLDG.	ARCHITECT	LOCATION	QUARRY	COMMENTS
1914	140.	Holy Trinity's Chapel of the Ascension	Unknown	W. Chester Boro	Brinton's?	
1927?	141.	William Galbrath Hse.	Unknown	New Oxford, Pa.	Dunlap & Martin's	

APPENDIX B

APPENDIX B: NAMES APPLIED TO THE SERPENTINE QUARRY IN WESTTOWN TOWNSHIP COMMONLY CALLED "THE QUARRY"

The various names that Joseph Brinton gave The Quarry were gleaned from letterheads, shipping labels, price lists, invoices, and advertisements that can be found in The Brinton Family Scrapbook; Westtown Township Ephemera Files - Business Houses A to Co; and Township Collections Boxes - Westtown Township Business Houses, Brinton's Green Serpentine Quarry Correspondence; as well as the Newspaper Clipping Files under "Westtown Township Business Houses" all located at the Chester County Historical Society Library, West Chester, Pennsylvania.

I've been able to date some of the names of The Quarry and they are indicated; but beware: these dates are NOT inclusive, they are simply the dates I have found; the names could have been used prior to and/or after the date(s) indicated. Many of the sources of these names are not dated, making it impossible to accurately date the names. I have a feeling that depending on the circumstances depended on how Brinton referred to his quarry. In more casual circumstance he used more informal names, in more formal situations he used the official or a

more official name. Only two names had any legal standing that I'm aware of at this point. "The Brinton Stone Company" appears in a legal notice of The Quarry's intention to file for a charter with the Commonwealth of Pennsylvania. The notice is dated April 4, 1893. And "The Brinton Serpentine Green Stone Company" appears as the name of The Quarry on an application to register the company name with the Commonwealth of Pennsylvania. That application is dated September 17, 1923.

Some of the names that were used by local people, the press, and other interested parties in referring to The Quarry are located in a separate list. These names were gleaned from newspaper articles, letters to Joseph Brinton, and personal experience. You will note that there are similarities in names between the two lists, but not necessarily in locations. In fact, it is interesting to note the different post offices and place names applied to The Quarry by various people, including Brinton himself.

The two lists now follow.

THE NAMES BY WHICH BRINTON REFERRED TO HIS QUARRY

1. The Brinton Green Stone Company, West Chester, Pa., [no date].

2. Joseph H. Brinton, Quarryman and Dealer in Pennsylvania Green Stone, Grey Stone and Brown Stone, Thornbury Post Office, Chester County, Pa., [no date].

3. Joseph H. Brinton, Thornbury Post Office, Chester County, Pa., [no date].

4. Serpentine Green Stone Quarries [West Chester, Pa.], [no date].

5. The Brinton Quarries, Thornbury Post Office, Chester County, Pa., 1872. The stone itself is referred to here as "Birmingham Serpentine Stone".

6. Birmingham Serpentine Stone Quarries and Steam-Power Stone Works, Thornbury Post Office, Chester County, Pa., 1872-1873.

7. Joseph H. Brinton's Green Stone Quarries, Thornbury Post Office, Chester County, Pa., 1879.

8. Joseph H. Brinton's Serpentine Green Stone Quarries, Thornbury Post Office, Chester County, Pa., 1885-1887.

9. Joseph H. Brinton, Serpentine Green Stone Quarries, Thornbury Post Office, Chester County, Pa., 189[?].

10. The Brinton Stone Company, 1893.

11. The Brinton Serpentine Green Stone Quarry, 1923.

12. The Brinton Serpentine Quarries, West Chester, Pa., 1929.

THE NAMES BY WHICH OTHERS HAVE REFERRED TO THE QUARRY

1. Chester County Green Stone Quarries, [no date].

2. Serpentine Ridge Quarry, 1860.

THE NAMES BY WHICH OTHERS HAVE REFERRED TO THE QUARRY, CONTINUED

3. Serpentine Stone Quarry, Birmingham, 1869.

4. The Brinton Serpentine Quarry, Birmingham, 1869, 1907 (see #12 above).

5. Brinton Quarries, Birmingham, 1888; Thornbury, 1906 (see #5 above).

6. The Brinton Serpentine Greenstone Quarries, Westtown, 1906 (see #11 above).

7. Serpentine Green Stone Quarries, Birmingham, 1931 (see #4 above).

8. Brinton's Quarry, Westtown Township, 1973.

9. The Quarry, ubiquitous.

APPENDIX C

APPENDIX C: BIBLIOGRAPHY

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APPENDIX D

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